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No. 12

TO DAM THE NIAGARA.

DEEP WATERWAYS COMMISSION READY TO REPORT THAT BY THIS MEANS AND AT AN EXPENDITURE OF ONLY \$1,000,000 LAKE ERIE AND THE DETROIT RIVER CAN BE RAISED 3 FEET, THE ST. CLAIR RIVER 2 FEET AND LAKE HURON 1 FOOT.

The matter of constructing a dam or such other works in Niagara river as will raise the water of Lake Erie and also the Detroit and St. Clair rivers will undoubtedly be given serious consideration at the next session of congress. The engineer branch of the war department will very probably be forced to take up this project, notwithstanding that it is in direct opposition to the work of dredging that has been going on for years past, as the commercial interests of the great lakes region are becoming thoroughly interested in it. The Cleveland Chamber of Commerce is trying to arrange with Geo. Y. Wisner of Detroit for an address on the subject of lake levels with particular reference to the question of a dam in the Niagara, and Congressman Corliss of Detroit has just addressed a lengthy communication to the secretary of war on the same subject. Mr. Corliss first directs attention to delays in the Detroit river in the vicinity of the Lime-Kilns crossing which are regarded as of as much loss on the whole as the recent blockade in the St. Mary's river, and then says:

"Large sums of money have from time to time been appropriated and expended in deepening the channel of the Detroit river at the Lime-Kilns crossing. A half million dollars was appropriated for this public improvement at the last session of congress. I am creditably informed that the expenditure of this money will not permanently perfect the navigation, in consequence of the fluctuation of the waters, and some other method for maintaining a uniform depth should be adopted. About two years ago congress authorized the appointment by the president of a deep water way commission for the purpose of ascertaining whether a deep water way could be established from the great lakes to the ocean. This commission is located in Detroit, and, I am informed, will be able to report the result of its most valuable labors the fore part of next year. Its investigations have taken into consideration not only the question of the most available route to the Atlantic, but also the fluctuations in the waters of the lakes and rivers extending from Buffalo to Chicago and Duluth, and the most available means for maintaining a uniform depth of 21 feet throughout the navigable channels. Upwards of \$1,000,000 was appropriated at the last session of congress for the purpose of deepening the channels and harbors upon Lakes Erie, St. Clair and Huron, and the rivers connecting therewith. The deep water way commission, I am creditably informed, from its investigations, will report to congress that by an expenditure of \$1,000,000 in damming the Niagara river below Buffalo, the mean level of the waters of Lake Erie can be raised 3 feet, those of St. Clair 2 feet, and Lake Huron 1 foot, elevating the mean level of the waters of the Detroit river at the Lime-Kilns crossing 3 feet, and thereby maintain perpetually a uniform depth of 21 feet for navigable purposes. This expenditure will be of far greater benefit than the excavations now being made for the purpose of deepening the channel in the Detroit river at the Lime-Kilns crossing. It seems to me that this subject is of such vast importance to the commerce of the lakes that a preliminary report should be submitted by the deep water way commission in order that action may be had at the ensuing session of congress. The commission has completed its investigation upon this subject, and could make a report thereupon by December, if so requested by you. Its general report, covering the deep water way to the Atlantic, cannot be completed in time for action at the ensuing session of congress, and I, therefore, earnestly request that you invite a preliminary report upon this subject in order that action may be taken during the ensuing session of congress."

NEW JAPANESE TORPEDO BOAT DESTROYERS.

Some very exceptional speed records have been made by the torpedo boat destroyers which Yarrow & Co. of England are building for the imperial Japanese navy. The fourth of these vessels, the Sazanami, during an official trial of three hours' duration, a few days since, attained the remarkable mean speed of 31.38 knots. The destroyers are each 220 feet in length by 20½ feet beam and propelled by twin screws. They are built of galvanized steel of extra strength, the longitudinal seams in the hull plating being jogged instead of fitted with the old-fashioned lining strips on the frames. The upper strakes have the rivet heads projecting instead of being countersunk, thus supporting the plate and helping to stiffen it. The propelling machinery consists of two sets of four-cylinder, four-cranked triple-expansion engines with cylinders of 20½, 31½ and 34 inches in diameter and 18 inches stroke. Steam is supplied from four Yarrow straight-tube boilers. The engines are designed to develop 6,000 horse power. The main steam pipes of the engines are of mild steel, solid-drawn, and are fitted with special expansion joints to prevent any working of the ship's hull putting an undue strain upon the pipes, independent of that caused by their expansion by heat. The bunker capacity of the vessel is in the neighborhood of 90 to 100 tons, which is sufficient to carry her across the Atlantic. A fact noticeable in connection with the steaming of this vessel is the ample margin provided in boiler power, each boiler being capable of supplying fully 100 horse power in excess of that required to develop the engine power contracted for. On the official trial of the Sazanami the dead load carried was 35 tons and the speed above given was attained with the engines making a mean of 392 revolutions per minute. The air pressure in the stoke holds was 1¾ inches, and the coal consumption during the three hours running, 15½ tons.

PITTSBURG COAL CONSOLIDATION.

As a result of a conference of the underwriting syndicates of the Pittsburgh Coal Co., held in Pittsburgh recently, it is expected that the rate of allotment for subscriptions will be announced within a few days. Although the stock of the company is \$64,000,000, of which \$32,000,000 is common stock and an equal amount preferred, there will be only \$30,800,000 of each stock issued, the balance being retained in the treasury of the company for acquiring other properties. The stock has been oversubscribed at least 33 per cent. Under these conditions, it is expected that the pro rata allotments will be about 75 per cent of the subscriptions. Very little of the stock has been placed in New York, as the Pittsburgh and Cleveland investors were favored in the matter of the subscriptions at the outset. When the books were opened at Moore & Schley's, in New York, there was a fairly large amount subscribed, but this was cut down when it was learned that the home interests were inclined to look so favorably on the project. Of the total amount the operators themselves subscribed about 70 per cent. It was on this account that the New Yorkers who were anxious to take stock in the new company were disappointed, as hardly any stock had been left for them.

An interesting feature of the financial end of the deal is the announcement that the managers of the affair will get about \$9,000,000 of the common stock as their pay. The rate charged for underwriting the stock was on the basis that for every 100 shares of preferred stock, there was a bonus accompanying it of 70 shares. The balance went to the bankers and underwriting managers. It is announced that the actual amount paid for the properties represented in stock was \$28,300,000. The consolidation is one of the largest that has ever been consummated in regard to the number of constituent companies, and some of the prominent New York bankers who have brought out several of the large industrials admit that the capitalization was most conservative.

CUMULATIVE PLAN OF REGISTER SUPPLEMENT.

The Great Lakes Register, Cleveland, has adopted the policy of issuing supplements on the cumulative plan. Instead of several supplements to the register extending over the year, the new plan involves in the second supplement all that was contained in the first, in the third all that was contained in the first and second, and so on through the year, so that when a new supplement is put out the previous issue is destroyed. This plan will undoubtedly prove quite satisfactory to subscribers to the register, as it will not be necessary at any time to refer to more than one supplement. The August supplement of this register just issued on the new plan, contains some sixty pages, dealing with probably 400 vessels that have just been classed in the register or regarding which new information is furnished.

"I am satisfied," says Capt. Herriman, surveyor-general for the register, "that our work of trying to put into force on the great lakes the same principles regarding a vessel register that prevail in all other parts of the world will go along more smoothly from this time on. Since our organization has been fully effected and since we have collected all manner of information regarding every ship afloat on the lakes, we have vessel owners visiting our office every day—some of them seeking special information bearing upon the purchase or sale of vessels—and they are gradually becoming acquainted with the fact that our duty, after we have classed a ship, will be to see that when she meets with injury she shall be restored to her class; that our work is that of serving the ship in the maintenance of her class and that we have no interest with the underwriters further than to treat them fairly in anything we may have to do regarding their obligations toward the ship."

It is the intention of the navy department to have every type of war vessel in the navy represented in the fleet which will greet Admiral Dewey upon his arrival in New York, and instructions have been sent to the commandant of the Newport naval station to get five torpedo boats in condition to participate in the ceremonies. The secretary of the treasury has assigned five revenue cutters to take part in the marine parade. They are the Onondaga, Algonquin, Gresham, Manning and Windom. Capt. Daniel B. Hodgson, who commanded the cutter McCulloch in the battle of Manila bay, has been assigned to the command of the revenue cutter fleet.

The William R. Trigg Co., enterprising ship builders of Richmond, Va., may in the near future be offered a more advantageous location than that at present occupied by their works. The present project for dyking the harbor contemplates the acquisition by purchase or condemnation of the W. M. Justis island, a tract twenty acres at low tide. It is now rumored that in case the island is acquired the Trigg company will move from its present site which is but two acres in extent to the Justis property where at least ten acres would be available. According to the report the Trigg company is also considering the advisability of constructing a dry dock.

John B. Prescott, well known Maine shipping man, was one of the callers at the office of the Wm. Cramp & Sons Co. at Philadelphia during the week of the Grand Army encampment. Mr. Prescott had never seen Henry W. Cramp, and when he was ushered into the presence of that gentleman he introduced himself as follows: "Mr. Cramp I own a vessel that is named after you; you own an interest in a vessel that is named after me, and we will both be owners in a new six-masted schooner building at Camden, Me."

WARD LINER HAVANA.

AN EXAMPLE OF THE BEST TYPE OF AMERICAN-BUILT VESSEL—LIKELY TO BE PURCHASED FOR ARMY TRANSPORT PURPOSES.

News comes from Washington that the new Ward line steamers Havana and Mexico have been inspected with a view to their purchase by the war department for army transport purposes. That these vessels would prove most valuable additions to the fleet goes without saying. They are the third largest merchant vessels ever built in the United States and they are thoroughly representative of the best American practice. Both vessels exceeded contract speed on their official trials and each in turn lowered all existing records for the time of passage between Havana and New York City.

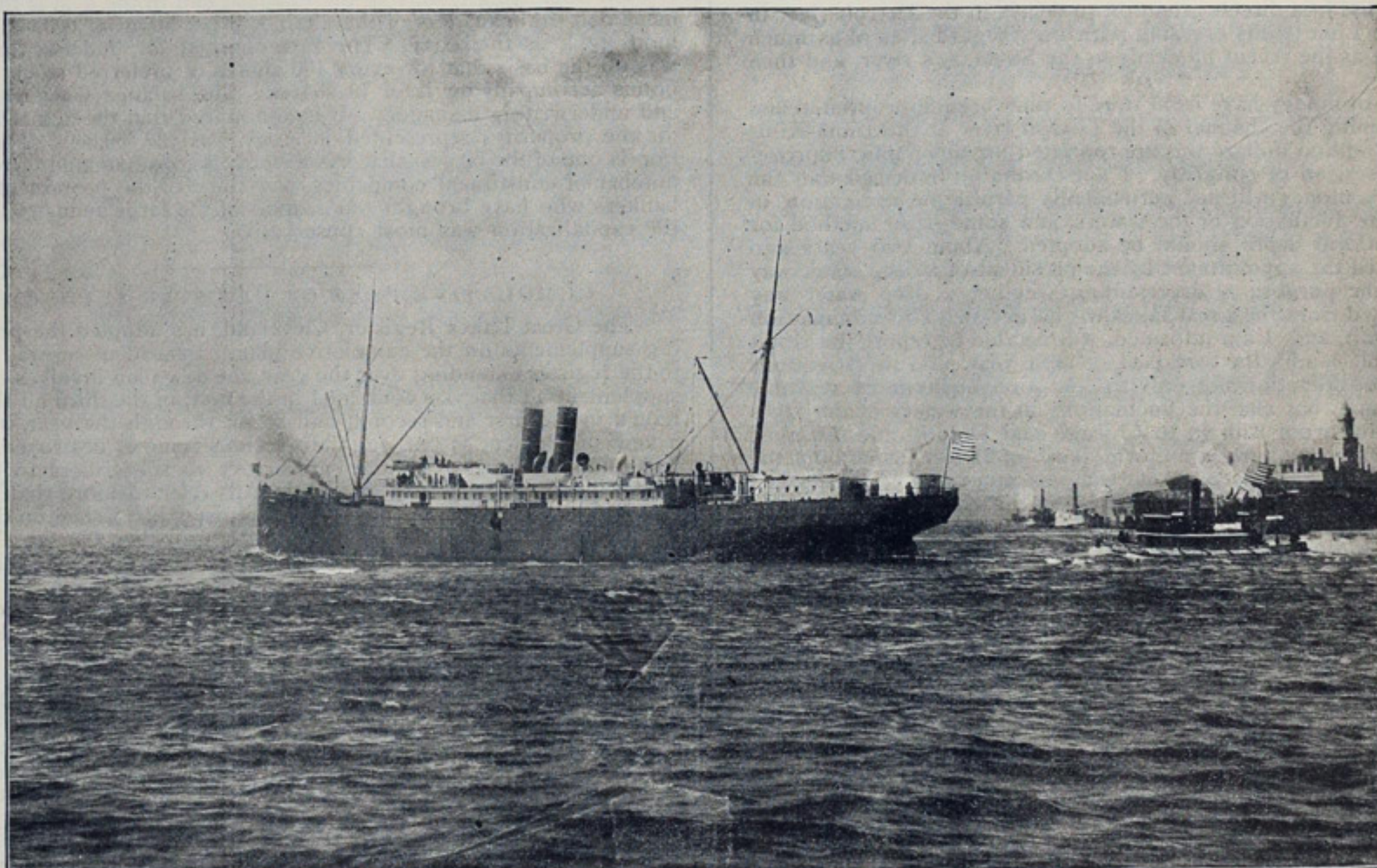
The reproduction of a photograph of the Havana, herewith presented, is perhaps the best portrayal that has been made of the vessel. The Havana, which like her sister ship the Mexico, was built by the Wm. Cramp & Sons Ship & Engine Building Co. of Philadelphia, is 360 feet in length on the water line, 50 feet beam, 32 feet 2 inches depth and of 6,600 tons burden. Accommodations are provided for 100 first-class passengers amidships, fifty second-class passengers aft and 200 passengers in the steerage. All the passenger accommodations, except, of course, the steerage, are on the hurricane deck and all the houses are of steel. The vessel was built to comply with the mail subsidy act covering second-class ships. The hull is divided into water tight compartments and there are six bulkheads. The hull is three-decked with a hurricane deck above.

WESTERN WATERWAYS ASSOCIATION MEETING.

The meeting of the Western Waterways Association, which was originally scheduled for November of this year, will be held the latter part of October, probably at Memphis, Tenn., although that point has not as yet been definitely determined. This association, which holds a meeting once every two years, is easily the most important of the organizations having as an object the improvement of the Mississippi river and tributaries. Following each of its meetings this organization urges upon congress the advisability of making appropriations for improvements that are most urgently needed on the line of the rivers. The scope of the organization is in no way limited to any specific kind of river improvements, and it is confidently expected that levees will form one of the principal topics of discussion at the forthcoming gathering. It is expected that not less than 400 delegates will be in attendance at the meeting. Capt. John W. Bryant of New Orleans is secretary of the association. The vice presidents for the several states are: F. G. Bromberg, Alabama; J. T. Brame, Arkansas; E. O. Stanard, Missouri; Leon Bryson, Iowa; J. C. Reno, Minnesota; W. W. Hite, Kentucky; E. C. Carroll, Mississippi; James O'Neal, Illinois; D. A. Nisbet, Ohio; J. A. Wood, Pennsylvania; R. C. Graves, Tennessee.

TRIAL OF THE KEARSARGE.

Acting Secretary of the Navy Allen has announced the personnel of the official trial board which will make an inspection of the new battleship Kearsarge prior to and during her official speed run off the Massachusetts coast, Sept. 25. The board of inspection consists of Rear Admiral Fred-



WARD LINER HAVANA, BUILT BY THE WM. CRAMP & SONS CO. OF PHILADELPHIA

There are two open hatches extending from side to side and two blind hatches forward and aft of these.

The vessel is fitted with two triple expansion surface condensing engines of the vertical type, designed to develop about 5,000 indicated horse power at ninety-five revolutions with a working pressure of 160 pounds. Cylinders are 25, 41½ and 68 inches diameter with a piston stroke of 42 inches. Steam is supplied from four cylindrical return-tubular boilers, each 15 feet 10 inches in diameter by 10 feet 5 inches in length. The coal bunkers are of a size sufficient for the storage of fuel for a continuous run of 4,000 knots. The chief engineer and his assistants, as well as firemen, oilers, etc., have quarters immediately around the machinery. The equipment of the vessel is admirable. The Havana, like the Mexico, is completely equipped with Worthington air, feed, bilge, fire and sanitary pumps.

Notwithstanding the fact that a number of changes and improvements in the finish of the machinery of the cruiser Albany have been made by the American inspecting officers stationed at the Elswick (England) works of Hawthorne, Leslie & Co., it is stated that the vessel will be ready for delivery to the United States government by the time stated in the contract. According to reports received in this country the English builders appear to have received with particular favor the suggestions made by Lieut. H. P. Norton.

Another steel plant is to be erected at once at Youngstown by the Republic Iron & Steel Co. It will be connected with the Brown-Bonnell plant and will be of 600 to 800 tons daily capacity. It is reported that portions of the steel plant at Alexandria, Ind., belonging to the Republic Iron & Steel Co., will be removed to Youngstown and incorporated in the new works. Plans have also been made for the erection of a third furnace of 200 tons daily capacity at this company's Pioneer plant, Thomas, Ala.

erick Rodgers, Capt. Robley D. Evans, Naval Constructor J. F. Hanscom, Commander William H. Emery, Commander Seaton Schroeder and Lieut. Richard Henderson. The board will be assisted by a special engineer board, consisting of Commanders Charles R. Roelker and H. Webster and Lieut. Commander A. V. Zane. It is expected that the board will be guided in the performance of its duties by the contract plans and specifications, but it is deemed proper that its report shall show the conclusion reached upon these important points: Whether the vessel is sufficiently strong to carry her armor and machinery, equipment, coal, stores and machinery; whether the vessel is strong and well built, and in strict conformity with the contract requirements; whether the vessel is complete and ready for duty. When the vessel is ready for trial, she being weighted so that her mean draught during the trial is 23 feet 6 inches, the board will proceed in her to the vicinity of Cape Ann for the purpose of determining her speed by runs over a course thirty-three miles in length. The vessel will be run over the measured course twice, and the privilege is granted to the contractors of making a second series of runs, provided the vessel should fail to fulfill any of the contract requirements.

A rather serious complication was encountered by Washington officials, a few days ago, on account of the enforcement by the collector of customs at Norfolk, Va., of the recent ruling of the treasury department that foreign vessels leaving American ports are not allowed to enter Porto Rican ports while carrying freight or passengers. Acting on this ruling, the collector at Norfolk refused to grant clearance papers to the Norwegian steamer Hebe, which arrived from Newcastle, England, via Delaware breakwater, and took on a cargo of coal for San Juan, Porto Rico. The action of the collector proved quite embarrassing, inasmuch as the Hebe was under charter to the United States government to take a cargo of coal to San Juan. The officials at Washington, after considerable telegraphing, decided to waive the enforcement of the regulation in the particular instance in question.

AN ACTIVE SHIP YARD.

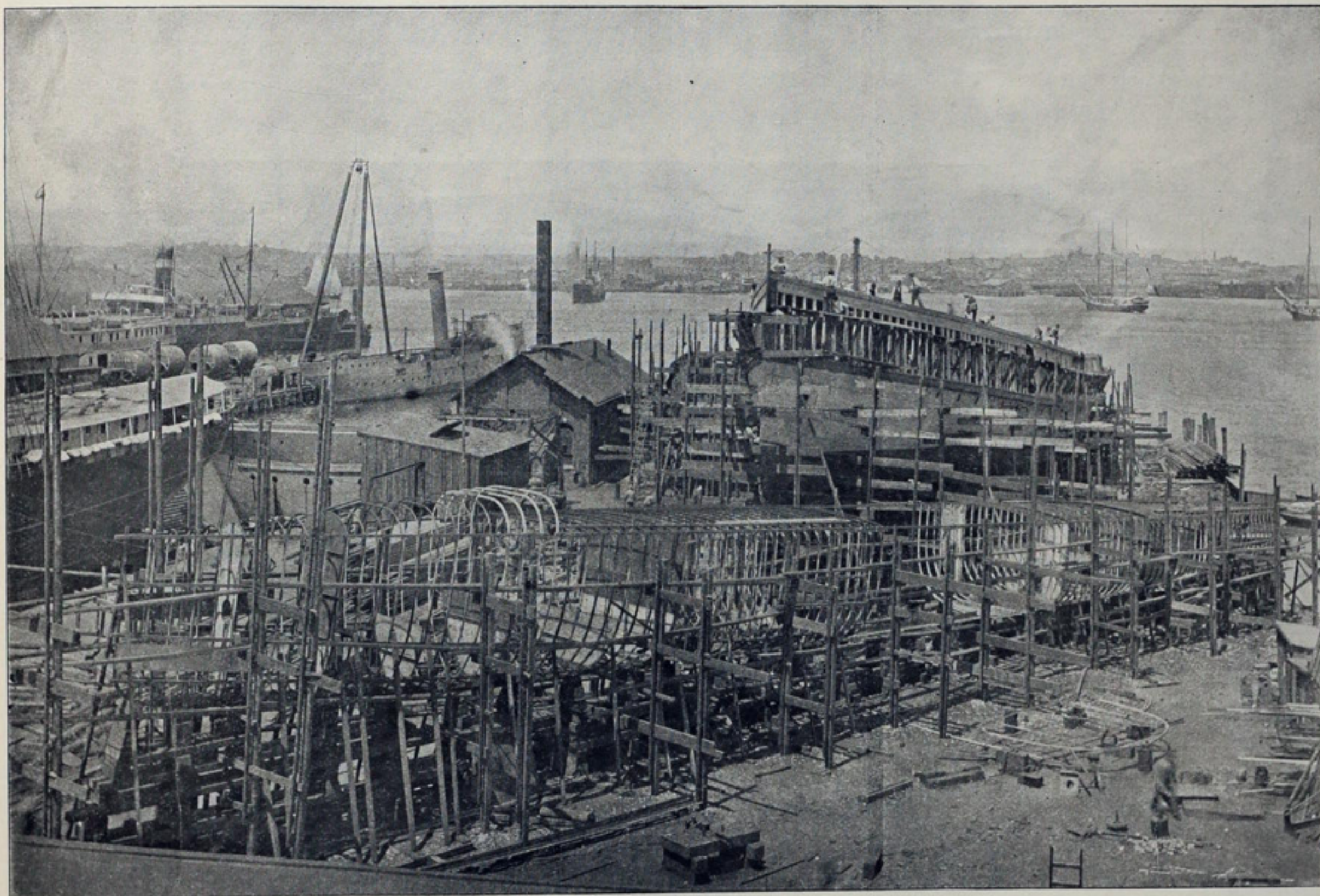
GREAT PLENTITUDE OF WORK OF VARIOUS KINDS AT THE PLANT OF THE COLUMBIAN IRON WORKS.

Among the busy ship yards along the Atlantic coast probably none is better known than that of the Columbian Iron Works & Dry Dock Co. at Baltimore, Md. Here it was that the staunch little Petrel was constructed. She had the opportunity in the late war to put the work of the Baltimore firm to a good test and was not "found wanting." Here also were laid down the cruisers Montgomery and Detroit, whose record for high premiums is still talked of in ship building circles, giving to the Columbian Iron Works the name for building fast boats.

In the last few years this yard has been employed in the building of torpedo boats for the United States navy, having under construction at one time the Foote, Rodgers, Winslow, McKee and the submarine torpedo boat Plunger; the latter being in the nature of an experiment has yet to prove her efficiency. The first three boats mentioned were built for a speed of 24.5 knots and all three came up to their requirements; the fourth boat, the McKee, was designed for 20.5 knots and was in every point a very excellent boat of her class. During the late war these four boats were to be heard from in the thick of the fight, as is instanced by the Winslow at Cardenas and the others in various engagements. Their records at the end of that hot spell of fighting, watching, despatching, etc., bore comparison with the same style and class of boats constructed else-

Hartford, building for the New York & Hartford Steamboat Co. She has since been launched and promises to be a model of her class and to come up to all requirements. A little beyond the bow of the Hartford, between her and the dry dock pump house, can be seen one of the tugs for the Consolidation Coal Co. Beyond the pump house the revenue cutter is lying alongside the dock receiving her machinery and being fitted up preparatory to trial. In the dry dock can be seen the stern of one of the boats of the Merchants' & Miners' Transportation Co. undergoing a course of scraping and painting. The dry dock, like some people, is never without a "burden," and consequently the resources of the yard are being continually drawn upon for repair work and the income correspondingly increased. On the dock alongside of the revenue cutter can be seen a new set of boilers for another of the steamers of the Merchants' & Miners' Transportation Co., which is now in the yard under a large state of repairs. In any reference to the affairs of this company, a note must be made of the high class of boiler work that is all the time under way. The yard has a reputation bearing upon boiler output, both water-tube and Scotch, that cannot be excelled.

Short reference to the submarine torpedo boat Plunger, building for the Holland company (some time ago reorganized) will probably also be in order. This boat being more or less of an experiment in the line of submarine craft has received some very decided set-backs, on account of various criticisms, and the Columbian Iron Works has had to bear a large part of the blame and responsibility for her non-completion. There is no doubt a portion of truth in some of the statements regarding this vessel, but the conditions have not been taken into account. It is needless



SCENE AT THE SHIP YARD OF THE COLUMBIAN IRON WORKS, BALTIMORE, MD.

where and in a great many instances were far in excess of like vessels built in other parts of the country.

This yard has also in the last few years been the scene of very active work in the merchant ship line. It has turned out the famous Standard Oil boat Maverick, which was burned near Halifax in the present year. For tightness of riveting and good caulking this vessel could not be excelled and filled the requirements of her calling beyond expectations. Here likewise were launched the two famous ferry-boats, which at the present day are still plying, summer and winter, from New York to Staten island. In later years the yard has been active in the construction of some of the largest sea-going tugs along the coast, for the Consolidation Coal Co., one of which displayed such excellent qualities when in the famous storm off the New England coast last winter. These tugs are looked upon as the best and most thoroughly equipped vessels of their kind along the coast, and they are excellent sea boats.

The revenue cutter Seminole is still at this yard, but in the last stage of completion, however, and her early departure is in sight. She is a very thorough piece of ship building and will no doubt prove a credit to her builders when called upon for action.

From the accompanying illustration one can gain some idea of the activity of the yard, the picture having been taken for the Marine Review about a month ago. In the foreground is seen the United States Torpedo Boat Tingey with her framing nearly completed, which boat at the present time is over one-half plated. The Tingey is one of the last batch of torpedo boats contracted for by the government and is designed for a speed of 26.5 knots. Rather prominent in the view of the ship yard is seen the

to say that in view of the fact that the Plunger is in a large degree an experiment, the various details of her internal mechanism have to be very carefully gone into and are very often subjected to great changes, owing to added efficiency, the main idea in the effort to make the "experiment" a success. Some of the greatest draw-backs tending to delay completion have been the proper installation and test of the electric and oil-fuel plants, for which the Columbian Iron Works as sub-contractors are not responsible. In the last few weeks a board of naval officers has been discussing the advisability of changing the present surface power of steam and triple expansion engines to internal combustion engines, as being equally efficient and doing away with the excess of machinery and eradicating the enormous generation of heat.

It is understood that the Columbian works contemplates entering into competition for a part of the contract for the six protected cruisers, authorized by the last congress, and the bids for which will be opened about Nov. 1.

The Hamburg-American Steamship Co. has just ordered from Blohm & Voss of Hamburg a twin-screw "steam yacht" to be known as the Princess Louise Victoria. She will be 400 feet in length, and will carry 200 first-class passengers with no mail or cargo. All of the staterooms will be outside rooms without upper berths and many will be connected with private baths. The vessel, which will be completed by July next, will resemble in every respect a private yacht and will have a speed of 16 knots. She is designed for cruises to Norway and to the Mediterranean and the Orient.

IMPROVE THE WEST NEEBISH CHANNEL.

OBJECT LESSON AFFORDED BY THE SINKING OF THE STEAMER DOUGLASS HOUGHTON IN THE ST. MARY'S RIVER—ATTENTION IS DIRECTED TO THE MOST IMPORTANT IMPROVEMENT NOW REQUIRED ON THE GREAT LAKES.

Pictures of the recent blockade of more than 200 vessels in the St. Mary's river, due to the sinking of the Rockefeller steamer Douglass Houghton in a narrow channel at what is known as Encampment, are presented at this time with a view to directing attention to the great necessity of appropriations being provided by congress for the proposed improvement known as the West Neebish channel. The improvement of this channel, to the westward of the present crowded course taken by all vessels passing up and down the river, has long been looked for by the vessel interests on account of the fear of just such an accident as that caused by the sinking of the Houghton. Detail surveys have been made of this channel recently, and also for widening the channel via the Middle Neebish an additional 300 feet, and the relative cost of the two channels will be submitted to the next congress by Col. G. J. Lydecker, the engineer officer in charge.

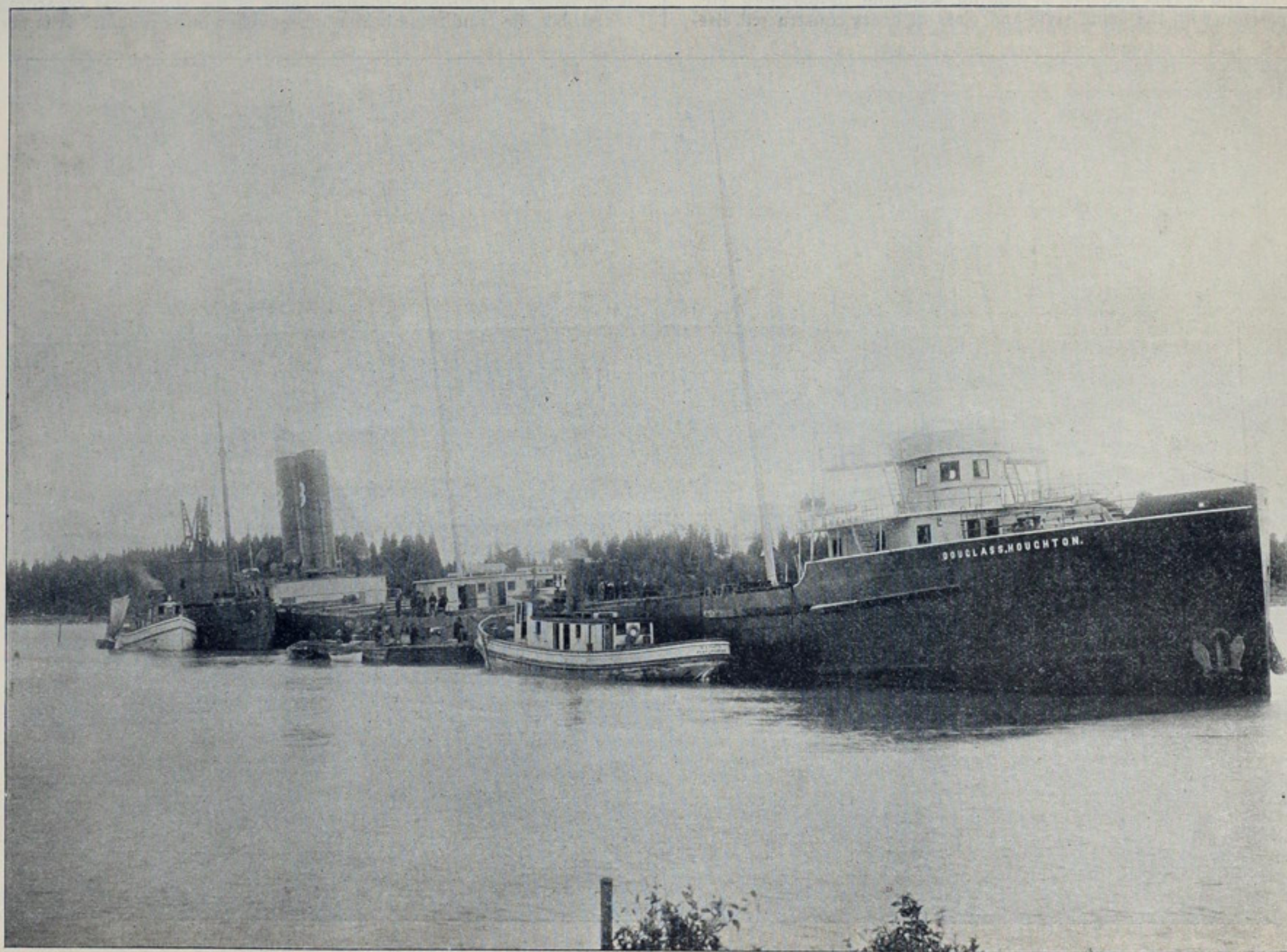
It is the intention of the Review to present, a little later on, an outline of the West Neebish channel, sketched from the St. Mary's river

cut her way into the limestone ledge a distance of 12 feet when she struck. Repeated charges of dynamite demolished the ledge, a fleet of tugs drew the steamer into the channel and the blockade was declared off.

DOMINION IRON & STEEL CO.

It is expected that one of the blast furnaces of the Dominion Iron & Steel Co., for whose furnaces and steel works the Wellman-Seaver Engineering Co. of Cleveland has the engineering contract, will be in operation in the fall of 1900 and that the remaining three called for by the plans will follow at intervals. The capital of the company, of which H. M. Whitney of Boston is president, is \$20,000,000 and its plans are on an extensive scale. If these are carried through the Dominion treasury will be taxed for a heavy sum in bounties, as \$2 a ton is paid for iron smelted in Canada and \$3 a ton for steel which is native made. The Dominion Iron & Steel Co. expects to reach an output of 800 tons of steel daily, all made from their own iron; in this way they will get double bounties, aggregating \$5 a ton. They will therefore draw \$4,000 a day from the Dominion treasury, or over \$1,200,000 a year. The company's works at Sydney, Cape Breton, are being erected at tidewater, with wharves at which the largest steamers can tie up. There are to be four furnaces, each with a minimum capacity of 250 tons a day.

The company owns seven mines at Sydney, capable of yielding 3,500,-



WRECKING OPERATIONS ON THE DOUGLASS HOUGHTON DURING THE RECENT BLOCKADE OF THE LAKE FLEET IN THE ST. MARY'S RIVER.

chart, and to accompany the same with such information as may be available regarding cost, etc. In the meantime the object lesson afforded by the Houghton disaster should be sufficient to cause immediate steps to be taken for this improvement. The spectacle presented by the Houghton wreck attracted attention all over the country. A procession of delayed vessels, estimated at forty miles in length, passing through the river after the channel had been cleared was certainly a sight seldom, if ever, witnessed in any other part of the world. Such a spectacle as this, illustrating in a thrilling and picturesque way the great commerce of the lakes, was probably needed to direct attention to the improvement now referred to. It may be said that at a low estimate half a million tons of freight will remain unmoved from Lake Superior this season on account of the delay of about five days due to the sinking of the Houghton.

The vessel interests were certainly warranted in extending to Capt. A. B. Davis of the revenue cutter service the thanks that were due him for the careful manner in which the blockaded fleet was handled, and the wrecking company in charge of operations on the sunken vessel (Thompson interest of Port Huron) is also deserving of special credit. The raising of the Houghton and clearing of the channel was one of the most rapid and successful wrecking jobs in the history of lake navigation. When divers made an examination of the wreck it was found that the ends of the steamer rested on opposite banks of a solid limestone cut, and after the work of patching and lightering had been completed it was found necessary to blast away the ledge of rock on which her bow rested. She had

000 tons of coal annually. Limestone is abundant near Sydney, and agents of Mr. Whitney have been buying up these properties during the past year. The iron mines on Bell island, in Conception bay, which have been bought for \$1,000,000, were purchased in 1892 by the Ferrona Steel Co. of New Glasgow for \$120,000. This company has now sold a portion of its holdings. The island is rich in iron, the veins running under the sea. The ore ledges are of peculiar formation; they are in the shape of segregated cubes formed by cracks running transversely. No. 3 seam, which is now being worked, is 10 feet thick, 300 feet wide and three miles long. It is estimated that there are 28,000,000 tons of ore available on the island without following the seams under the sea. The ore is loaded into cars which are carried to the wharves by an endless cable. The cars are unloaded automatically into pockets, from which the ships are loaded. The cost of the ore free on board is about 30 cents a ton, and it is said that the ore laid down at the blast furnaces will not cost more than 50 cents a ton.—Iron Trade Review.

The navy department has received the record of proceedings and findings of the naval court of inquiry which assembled in Boston to investigate the collision between the despatch boat Dolphin and the ferryboat New York in the East river, New York. The finding completely exonerates Lieut. Commander W. H. H. Sutherland and the other officers of the Dolphin. It is understood that the court does not express an opinion as to the extent of the responsibility of the New York.

AROUND THE GREAT LAKES.

The steamer J. B. Ketcham No. 2 has been sold to A. W. Comstock of Alpena, Mich., for \$50,000.

Officials of the Great Lakes Towing Co. are figuring with the owners of tugs in Toledo and Milwaukee, the two places not as yet in the consolidation, and it is expected that the company will shortly include these lines, this covering completely the entire chain of lakes.

Capt. James B. Lowe, who brought out the steamer Presque Isle, is at Detroit to oversee the fitting out of the new steamer Angeline, which he will sail. Delay in getting material for the cabins of this vessel will prevent her delivery to owners, Mr. W. G. Mather of Cleveland, and others, until about Oct. 10.

Capt. W. L. Averill of the steam yacht Peerless writes from New York that he had a very quick passage from Fairport on Lake Erie to the Metropolis. The Peerless, which is owned by Mr. Harkness, left Fairport at 5 p. m. Sept. 3, arriving in New York at 5 a. m. on the 12th (8½ days), having run at less than half speed on Long Island Sound, so as not to get in until daylight.

After selling to Drake & Maytham of Buffalo the steel steamer W. H.

Deep-laden vessels could not, of course, use the channel, but it would admit of 14½ to 15 feet draught.

Commander F. M. Symonds, inspector of the ninth light-house district, is to be congratulated upon having found the shoal water southeast by south from Lansing shoal gas buoy, Lake Michigan, where several vessels, including the Victory, Haskell and Tokio, struck within the past year. A rock with only 15 feet of water over it has been found one-third of a mile southeast by south from the gas buoy and has been marked with a red spar. Capt. Geo. P. McKay of Cleveland has suggested to Commander Symonds that the gas buoy be moved now to the shallow spot just found.

It is understood that subscriptions to the capital stock of the Buffalo Dry Dock Co., which has purchased the Mills dry dock plant at Buffalo, are being paid in, and the new company will soon be in possession of the works, with plans already outlined for extensive improvements. Names connected with the new company as prominent stockholders include Robert R. Rhodes of Cleveland, Edward Smith of Buffalo and members of the firm of Charles E. & W. F. Peck of New York, who have been extensively interested of late in insurance on the lakes. The



VIEWS OF THE BLOCKADED LAKE FLEET AT SAULT STE. MARIE, MICH.

FULL HALF A MILLION TONS OF FREIGHT WILL NOT BE MOVED FROM LAKE SUPERIOR THIS SEASON, ON ACCOUNT OF A LOSS OF ABOUT FIVE DAYS TO THE FLEET PICTURED HEREWITH, THROUGH THE SINKING OF THE ROCKEFELLER STEAMER DOUGLASS HOUGHTON IN THE SAULT RIVER.

Gratwick for \$212,500—just what she cost when built several years ago—Capt. John Mitchell of Cleveland said that the four smaller steamers of his fleet—Lauber, Mitchell and others—are also for sale. His plan is evidently to dispose of the older and smaller vessels, in view of the fleet of six steel carriers of the largest type which he will have next season when the steamer now building at the Globe work, Cleveland, is completed.

In four and a half days, the Whitney steamer E. W. Oglebay of Detroit, one of the fastest of the lake ore carriers, ran from South Chicago piers to Ashland, loaded a cargo of iron ore and got back to the Calumet piers again. The time for loading was not very long, even for iron ore, but the average running time for the round trip, a distance of 1,552 miles, was at the rate of 15 miles an hour. This includes the St. Mary's river and the time spent in the locks at the "Soo." The exact time was 108 hours and 27 minutes.

Mr. F. C. Robbins, who is located at the government signal station at the "Dyke," St. Mary's river, suggests, very properly, in view of the experience of the few vessels that tried to pass through the St. Joseph (Canadian) channel after the sinking of the Houghton, that an effort should be made to have the Canadian government carefully mark and buoy that portion of the channel from the lower end of Sugar island to Detour.

formal organization has not been effected, so that the list of officers, if decided upon, has not as yet been given out.

It has been said in connection with the recent contract placed by Mr. W. C. Rhodes of Cleveland with the American Ship Building Co. for a Welland-canal-size steamer that the ship builders are asking \$405,000 for the largest-size modern steel freighters—505 feet over all. When it was reported, a short time ago, that \$350,000 each was paid for the four Wolvin steamers of this class that are to be built at Lorain, the price was considered very high. The cost of the Rhodes steamer will very probably be full \$165,000. This steamer will be of the same dimensions as the Huron of the Rhodes fleet, but will have greater power. Her engines will have cylinders of 20, 33 and 44 inches diameter and 40 inches stroke, and she will have two boilers, 12 feet 8 inches by 12 feet, supplying steam at 170 pounds pressure.

The Bath Iron Works, Bath, Me., will on Saturday launch the torpedo boat Craven, a sister vessel of the Dahlgren which achieved such a remarkable record on her recent trial.

The British admiralty has directed the resumption of experiments with liquid fuel on board the torpedo boat destroyer Surly.

MERCHANT MARINE IN THE FOREIGN TRADE.

EXPRESSIONS OF OPINION IN RESPONSE TO THE INVITATION RECENTLY ISSUED
BY THE MARINE REVIEW—EVIDENCE OF GENERAL INTEREST
IN THE SUBJECT.

Answers this week to the invitation from the Marine Review for expressions of opinion as to what, if any, legislation should be enacted by congress in order that the United States may increase the number of merchant vessels in the foreign trade, are from B. L. Pennington of the Lockwood-Taylor Hardware Co. of Cleveland; Geo. Y. Wisner of Detroit, member of the United States Board of Engineers on Deep Waterways; J. S. Fay, Jr., of Boston, who was until a short time ago a leading spirit in affairs of the Lake Superior Iron Co., one of the large mining corporations of the Lake Superior region that was recently sold out to the Oliver Mining Co. (Carnegie interest); and E. T. Evans of Buffalo, western manager of the Anchor line of steamers. The questions upon which these communications are based are as follows:

1. Shall the United States continue to allow its merchant marine in foreign trade to fight a losing battle until it entirely passes out of existence and foreign nations absorb the ocean carrying of our entire import and export trade?

2. Shall the United States decide, as its permanent nonpartisan public policy, that an equitable share of its imports and exports must be carried on vessels of the United States, built in our own ship yards and flying our own flag, and that congress will enact whatever national legislation may be needed to stimulate and encourage our citizens to create, maintain and operate the vessels this policy calls for?

3. If it is recommended that congress shall enact remedial legislation what shall it be, and why?

FROM B. L. PENNINGTON, OF CLEVELAND.

Editor Marine Review: Yours propounding certain questions concerning the United States merchant marine and inviting my views thereon duly received. This response thereto will suggest the questions, saving the space of reproducing them, and embody the answers, though perhaps not in the regular order.

Undisputed statistics bear out your assertion that our merchant marine "has been fighting a losing battle in competition to foreign ships." From 1829, when our merchant vessels carried 90 per cent of our imports and exports, to 1898, when they carried but 8 per cent, we see that we have been distanced by our competitors in the race. The foregoing figures, however, show only the relation of our tonnage to our imports and exports; and as these latter have largely increased in volume, the per cent has correspondingly decreased. But the humiliating fact remains that foreign tonnage is now carrying about 92 per cent of our goods for which we are paying in freights nearly two hundred million dollars annually. This sum for the most part has not been lost to the United States as has frequently been asserted. The large investment we should have been obliged to make (450 to 500 million dollars) to build and equip the necessary tonnage to earn, annually, the amount of freight, we have employed to better profit in developing our vast indigenous resources. Luckily for us, at such time, we could charter foreign tonnage for our needs, cheaper than to own it. For, if our capitalists could not build and man ships so cheaply as abroad, it is evident that other employment of capital was more remunerative and on which better than foreign wages could be afforded.

Through our tariffs that advanced the price of manufactures and the wages of labor, we were handicapped in the ocean carrying trade and in the markets of the world, but meantime, having a vast domain at home to develop, we have prospered. But now we are brought face to face with new conditions. We realize the reward of our vast capital employed in building up our immense plants for rapid and cheap production. Our mammoth industrial development and recent double-quick march upon the markets of the world, have exalted our pride and evoked the envy of our competitors. Our magnificent naval victories in the Spanish war were the admiration of the world. In the presence of such incentives to patriotic pride all Americans aware of the conditions feel a keen sense of shame and humiliation concerning our lack of such a merchant marine on the oceans as shall compare favorably with that of other nations and be consistent with the dignity of the United States. The flag we admire and love is seldom seen in foreign harbors. Truly in the matter of our marine on the high seas the "flag is lowered," while on our inland seas with their vast and growing tonnage, it is unfurled triumphant.

We have surely come to the time for rehabilitation. But those who control our capital will not take the risk—they can do better. In such situation we can turn only to our fostering parent, the United States government, and ask such aid as shall enable us to compete and to justify the employment of capital which is now ample beyond the needs of the industrial arena where it has hitherto been so profitably employed.

Social, industrial and economic changes are now going on at such rapid pace as show almost certainly that before very many years, even without aid, such employment of capital will be profitable. If this were not apparent and a subsidy must needs be perpetual to sustain the restored marine, I should oppose it. But we should commence building under government aid as soon as granted, as an infant industry needs protection for a time until it can stand alone. Our government has a special interest in such development, for it can the better, in time of menace or war, suitably draw transports for its defense from a large merchant marine—a marine built with reference to the government's possible needs.

But what character of subsidy should the congress be asked to enact into law? Senate bill 5590 is a carefully prepared measure, but has been criticised by many as requiring a subsidy larger than the government would be justified in expending. My criticism will be one of discrimination only. I believe the extra compensation under clause "B" is too large, especially for the largest and fastest vessels, since such large craft already have in their favor the fact that they can make much more money than small craft, in proportion to their value, respectively; and for the further reason that such compensation will stimulate the building of passenger and mail steamers more than freight boats, of which there is

equal need. There is also a discrimination in favor of large boats in clause "B," against the smaller and slower boats in clause "A," the tonnage now in commission being largely included in the latter clause. The object of the bill is undoubtedly to encourage the building of the largest and swiftest craft, but these would be built under a subsidy equal on all, since large craft are most profitable. Besides, in my opinion, the smaller compensation in clause "A" is an unjust discrimination against our existing tonnage which has fought so long and so bravely against great odds for existence. It has stood for America in foreign harbors, floating the stars and stripes, showing the seris of old monarchies the symbol of a free government. This small tonnage should not be discriminated against for another reason: Many harbors have shoal water and only vessels of light draught can enter. It is expensive to transfer from lighters, so smaller craft must of necessity be built and the compensation must be sufficient to insure their construction.

So, as stated, I am in favor of a uniform subsidy, whatever it may be, applying to all tonnage alike. But in view of the urgent necessity it were better that the bill as it stands should go through than that any measure for relief fail of passage at the next session. A fair and liberal subsidy will give existing tonnage a chance to compete and to make a little money; will set our ship yards to work from Bath to Seattle, engage idle capital, and give employment to thousands of workmen at good wages. Our marine thus gradually expanded, we can at length carry our passengers, mails and merchandise in American bottoms. When this bids fair to be accomplished our shame and humiliation will give place to exaltation and patriotic pride.

B. L. PENNINGTON.

Cleveland, Sept. 18, 1899.

GEO. Y. WISNER, MEMBER OF DEEP WATERWAYS COMMISSION.

Editor Marine Review: The adoption of a national policy based upon a correct interpretation of the three questions relative to our merchant marine in foreign trade, on which the Marine Review has invited expression of opinion, is of vital importance to the future commercial prosperity of this country. In regard to the first two questions there can be but one opinion, for no one interested in the commercial advancement of the United States—which is simply the prosperity of all of its citizens—can view with favor any suggestion of further decline of our merchant marine, and certainly there can be no hope for improvement until the government adopts such a broad public policy as will enable the American ship owner to meet his foreign competitor on an equal footing.

There can be no doubt as to the advisability of congress enacting remedial legislation, but what the nature of such legislation should be is a question which should receive the careful consideration of the ablest economists and financiers of the country. While it is true that our foreign merchant marine has rapidly disappeared from the ocean, until it is now only 10 per cent of what it was previous to the civil war, it may be well to consider whether the conditions have not now so changed that further decline is no longer necessary. To arrive at a clear conception of the situation it is necessary to fully understand why our merchant marine which was driven from the seas during the civil war, instead of regaining its former standing after the trouble was over, continued to decline while almost every other industry had an unprecedented boom. In fact there are good reasons to believe that if the civil war had never occurred the decline of American shipping would not have been delayed much beyond its actual date. The transition from wooden to steel vessels was bound to come, and at a time when the steel industries of the United States were not in a condition to allow the American ship builder to successfully compete with his English competitor, and since any nation which does not build its own ships is handicapped relatively to the one that does, it seems evident that a loss of a large amount of our foreign carrying trade was unavoidable.

This condition no longer exists. It has been demonstrated that we can produce steel and build ships just as cheaply as in Europe, and there seems to be no legitimate reason why the United States should not become in the near future the principal steel producing and ship building country of the world. This would not only mean the retention in this country of the \$200,000,000 now annually paid for carrying our foreign commerce, but also the benefits to be derived from a ship building industry on a scale of sufficient magnitude as to be able to construct and maintain the ships required to do the business.

There is not a producer in the United States who would not be benefited by such a condition of affairs, and it should be the duty of every citizen who appreciates the situation to see that his representative in congress fully understands that remedial laws should be enacted at the earliest date possible. In undertaking to enact such laws as may be deemed expedient, the issue must be squarely made that unless governmental aid is extended to the American ship builder and owner the merchant marine of the United States cannot regain its former foothold on the ocean; but once regained it is probable that the benefit would be such that the ship building industries and foreign transportation business would soon become self-supporting.

GEO. Y. WISNER.

Detroit, Sept. 16, 1899.

MR. E. T. EVANS, WESTERN MANAGER ANCHOR LINE.

Editor Marine Review: There can be only one answer from every loyal citizen of the United States to your first question, and that is "No." If United States ships in the foreign trade had made money, there would have been plenty of them; that there are none, is because they don't pay. To secure them, the United States must help, and so every loyal citizen of the United States must answer your second question "Yes."

I answer your third question: The legislation should provide for a monied contribution to the ship owner, graded according to the size and speed of the ship, and continued during the life of the ship. We would better have too many ships than too few, and the government should err on the side of spending too much money rather than so little that the object will not be accomplished.

E. T. EVANS.

Buffalo, Sept. 16, 1899.

MR. J. S. FAY, JR., OF BOSTON.

Editor Marine Review: I firmly believe in the policy of the United States granting as liberal subsidies (mail, etc.), to our vessels engaged in foreign trade as are granted by any other nation, and meeting any and

all such (or other) competition in the same way and with equal liberality, whatever form it may have to take. This will build up regular lines of our own and increase our foreign markets and exports of manufactured goods.

The only condition should be a requirement that the vessels shall be built in the United States.

Boston, Sept. 11, 1899.

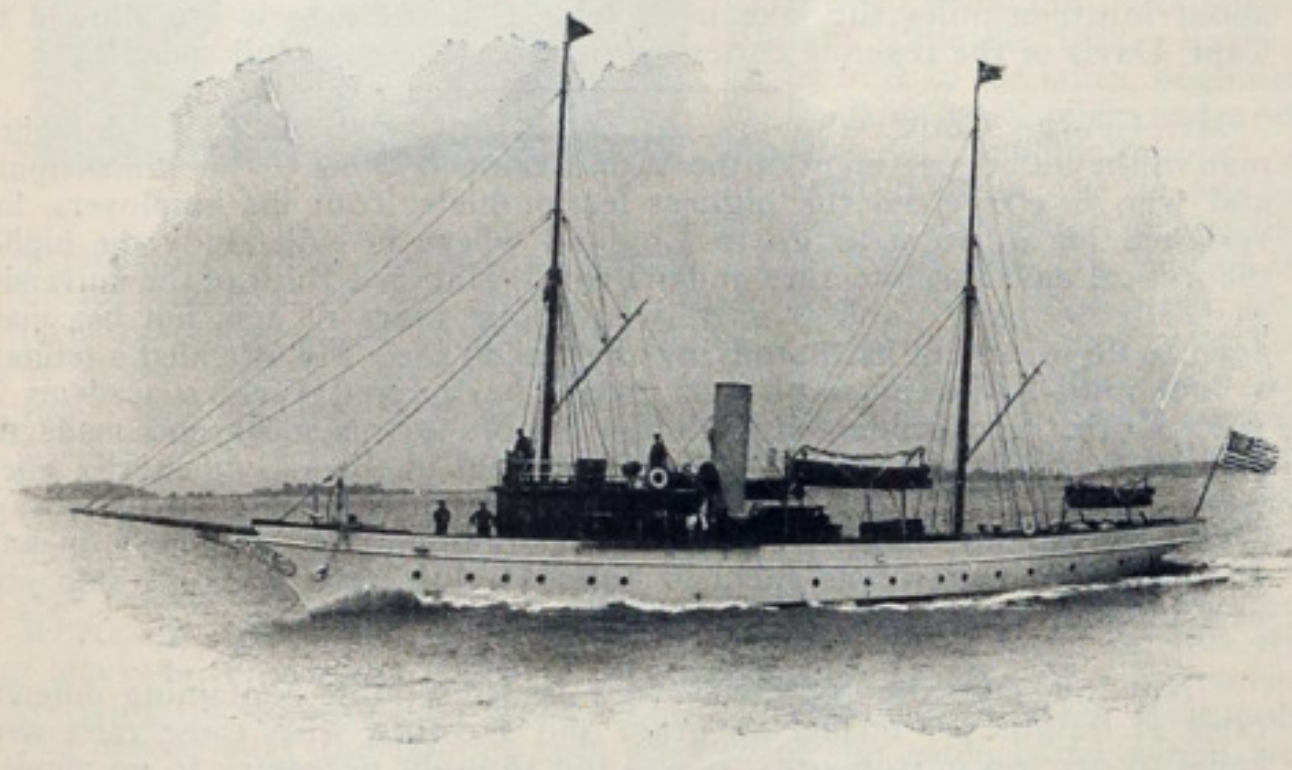
J. S. FAY, JR.

BATH BUILT STEAM YACHTS.

SOME MAGNIFICENT PLEASURE CRAFT TURNED OUT BY MAINE'S BEST KNOWN SHIP BUILDING INSTITUTION.

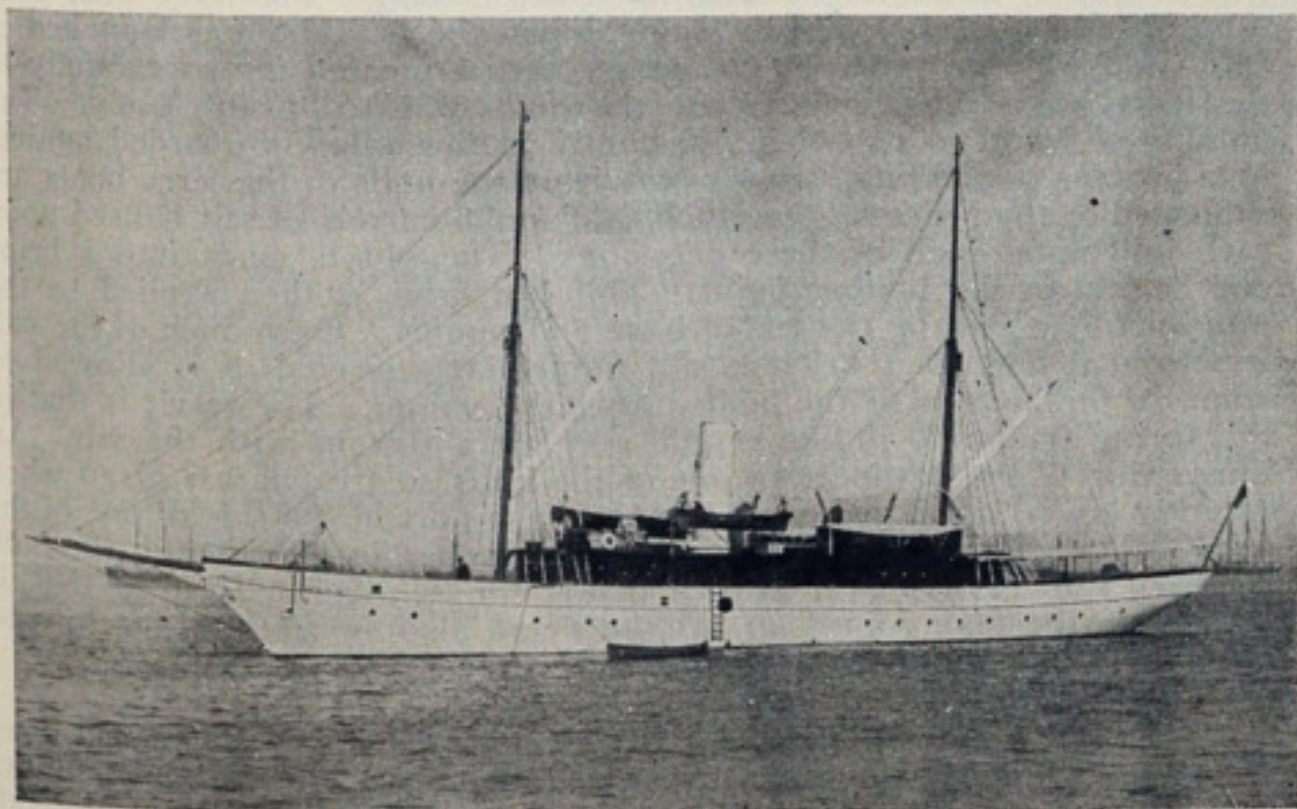
The methods of the Bath Iron Works of Bath, Me., in steam yacht construction have recently been the subject of no little attention in ship building circles, as the result of the showing made by Col. O. H. Payne's steam yacht *Aphrodite*, one of the most recent products of the Bath plant. Not only is the *Aphrodite* the largest American built steam yacht afloat, but her speed record of $17\frac{1}{4}$ knots in dead water on Long Island sound would seem to justify the claim of her owners that she is the most powerfully-engined and fastest privately-owned pleasure craft in the world.

But the story of steam-yacht construction at the Bath Iron Works neither begins nor ends with the achievements of the *Aphrodite*. Before the Payne vessel was thought of the Maine firm had a record sufficiently



STEAM YACHT ILLAWARRA—BUILT AT BATH.

creditable to place them in the front rank of constructors of this very exacting class of boats. All of the Bath-built yachts are designed by Mr. C. R. Hanscom, superintendent of the works, and in everything from ship-shape appearance to interior finish they speak volumes for his knowledge and taste. The pioneer steel steam yacht built at Bath was the *Eleanor*, and she has made a record as one of the most successful of the sea-going pleasure craft. This vessel has up to date steamed more than 150,000 miles. Her two years' cruise of 65,000 miles around the world was accomplished without a single accident and without the expenditure of a dollar for repairs. The *Eleanor* was built for William A. Slater of Norwich, Conn., in 1893, and was at that time the largest American-built yacht afloat. She is now the property of Mrs. Cardeza of Germantown, Pa. The *Eleanor* is 245 feet over all, 208 feet on the water line, 32 feet beam and 20 feet deep. She draws aft about 14 feet of water, her gross tonnage is 804 and her net tonnage 402. She is barque-rigged and spreads



THE PEREGRINE—A BATH BUILT YACHT.

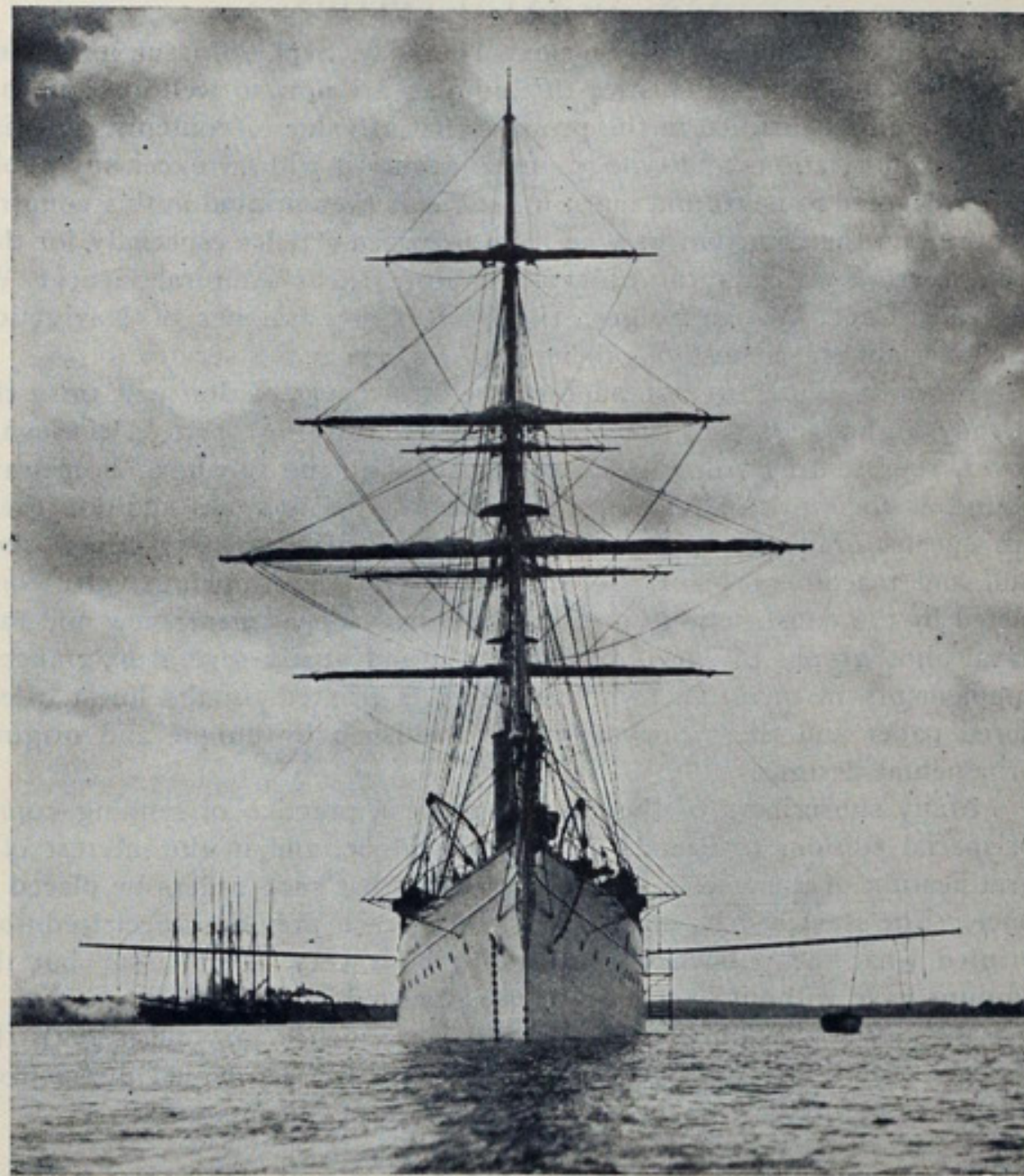
14,000 square feet of canvas. Under steam alone the *Eleanor* has attained a speed of $14\frac{1}{2}$ knots, although the contract under which she was built stipulated a speed of but 12 knots. Under sail alone she has made 9 knots. The vessel was built for deep-sea cruising, for which she has many times proven her admirable adaptability, and she is well equipped with coal bunkers, water tanks and store rooms.

The *Peregrine*, another of the Bath fleet, is capable of crossing the Atlantic, but has been employed almost constantly since her construction three years ago in cruising up and down the Atlantic coast. Her present owner is Ralph H. White of Boston. She is schooner-rigged and single-screw of the following dimensions: Length over all, 160 feet; length on the water line, 131 feet; beam, 23 feet; depth, 15 feet; load draught, 11 feet; gross tonnage, 247; net tonnage, 79. She is fitted with triple ex-

panison engines of 800 horse power, to which steam is supplied from Almy water tube boilers. This machinery is capable of driving the vessel at a speed of 14 knots.

The service of the yacht *Illawarra*—rechristened *Oneida* after her purchase by the government—in the Cuban blockading fleet during the Spanish-American war brought that vessel into some prominence and attested her seaworthiness. The *Illawarra* was constructed for Eugene Tompkins of Boston at about the same time that the *Peregrine* was built. She is 130 feet in length over all, 107 feet on the water line, 18 feet 6 inches beam, 12 feet deep and 8 feet load draught. This vessel is schooner-rigged, has triple expansion engines and two water tube boilers, and is capable of maintaining a cruising speed of 14 miles an hour.

For purposes of comparison it may be mentioned that the *Aphrodite* is 304 feet over all, 261 feet water line, 36 feet beam, 22 feet depth and 16



STEAM YACHT ELEANOR—BUILT BY BATH IRON WORKS, BATH, ME.

feet draught. The Bath Iron Works has also under construction at the present time the yacht *Virginia*, building for Mr. Isaac Stern of New York, and mention of which has several times been made in the *Review*. The *Virginia* is 200 feet over all, 165 feet on the water line, 26 feet beam and 16 feet deep. She will be fitted with triple expansion engines, to which steam will be supplied from a large Scotch boiler. The contract stipulates that the yacht shall develop a speed of 14 knots under forced draft. The facilities of the Bath Iron Works for steam yacht building are especially advantageous, in view of the firm's possession of a large steel ship shed 315 by 52 feet in size. In this structure craft under construction are well protected from the weather.

KNOW YOUR OWN SHIP—WALTON.

No one who has seen the work will think it in the least degree strange that Thomas Walton's "Know Your Own Ship" should have run through three editions. Where the cause for surprise is likely to be found is that the fourth edition of this valuable work, which has just come from press, should be possible of such improvement over its predecessors as it manifests. The volume embodies a simple explanation of the stability, trim, construction, tonnage and freeboard of ships, together with a fully worked out set of the usual ship calculations from drawings. The whole is specially arranged for the use of ship's officers, superintendents, engineers, draughtsmen and others. The author, Thomas Walton, is well known to many of our readers as the author of "Construction and Maintenance of Ships Built of Steel," and he was until lately lecturer upon naval architecture in the British government navigation school at Leith. The book is designed to meet the growing desire on the part of officers of the merchant marine for a more scientific insight into the principles of their profession and the sciences upon which the art of navigation is founded. The treatment, while thoroughly scientific, is yet free from abstruse technicalities and the style is such as to render it easy for the young sailor to gain a knowledge of the elements of his profession by private reading and without difficulty. Readers who have in their libraries any of the earlier editions of Mr. Walton's book will find much that is new and instructive in the present enlarged form of the work. Additions vast in extent have been made to the chapters on water ballast and water pressure, while the chapter on "trim" is entirely new. The illustrations with which the book is embellished include a large number of new diagrams.

"Know Your Own Ship" is published by Charles Griffin & Co. of London and may be had in America through the J. B. Lippincott Co. of Philadelphia.

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ANNUAL NAVAL EDITION.

The Marine Review will on next Thursday, Sept. 28, issue its second annual naval edition. Plans for this number are now so well in hand that we feel entirely justified in the promise that in value of contents, magnificence of illustrations and typographical beauty it will far excel any publication devoted to naval and maritime subjects ever printed in this country.

Among the contributors who have prepared articles especially for this edition are Rear Admiral Philip Hichborn, Rear Admiral George W. Melville, Capt. W. N. Folger, U. S. N., Commissioner of Navigation Chamberlain and a host of others, well known in the service.

From an illustrative standpoint the 1899 naval edition will raise the already high standard of the Marine Review in this respect. An elegant cover, representing Admiral Dewey's flag ship, the Olympia, homeward bound, is the work of Nicholas J. Quirk of Chicago. In addition there are special drawings by other well known marine artists; unpublished hull and machinery plans prepared from working drawings, just completed by the construction bureaus of the navy department; new and rare naval photographs of exceptional interest, and finally several magnificent supplements in tint. The whole number is printed on the finest calendered paper and the typography is embellished by unique and original ornamental designs.

Many subscribers of the Review make a practice of sending copies of special editions to friends all over the globe, and in the interest of a gratification of their desires we beg to urge that such orders be placed at once. The Review has, on the occasion of each previous special edition, printed what the publishers believed to be a very liberal issue but the editions have without exception been exhausted in a few days.

Persons for whom it will prove a convenience may place with the Review orders for additional copies and they will be mailed direct from this office to any part of the world at the rate of 25 cents each.

Some wild stories have been sent out from Conneaut to the daily papers of late regarding the Hulet ore unloading machine, with which the Webster, Camp & Lane Machine Co. of Akron has been experimenting on the Carnegie docks at that port. There is absolutely nothing in the report that it has been necessary to take special precautions to guard against destruction of this machine by the ore shovelers, who are said to fear a great loss of employment if the device should prove successful. There is work enough for ore shovelers everywhere under the rush that prevails throughout the lake region, and it should be said to the credit of the men anyhow that labor-saving machinery accomplishing almost as much as is expected of the Hulet device has repeatedly been introduced on the ore and coal docks without violence of any kind. This new machine, which is planned somewhat on the principle of a bucket dredge, and which is intended to displace great numbers of men now employed at shoveling ore in the holds of vessels (probably to make place for them in other directions on account of increased tonnage) was tried a few days ago but not with very great success. It is understood that the principal fault was a lack of strength in the design. But as the machine is entirely of an experimental kind, drawbacks of this kind were expected and will not interfere with the plans that have been made to perfect a device on the so-called dredge principle if it is at all possible to do so.

If Edwin F. Cramp of the Wm. Cramp & Sons Co. is correctly quoted in dispatches from Philadelphia, the charge he makes regarding labor troubles at the Cramp works is certainly of a serious nature. Mr. Cramp is reported to have said that the efforts of certain labor agitators to bring about a strike at the Philadelphia works is part of a scheme of certain English ship building firms to organize a general strike among employees of similar firms here and to regain the ground they had lost in the big English strike two years ago. "The American ship building industry is the real objective point of attack," he added. "Our firm, as labor agitators now plying their vocation in this city well know, is being made the scapegoat of the scheme. If this attempt upon us had succeeded every American ship yard would have been attacked. The motive is plain, for it would have taken certain work away from this country and returned it to England. There are at present ten ships in the market, on which American builders are preferred as bidders. A tie up of all the ship yards here would naturally place these contracts and many others on the books of foreign ship builders. This is the true inwardness of the clever scheme, and the American public should be made acquainted with the facts."

A class in the study of naval architecture is to be organized by the Young Mens' Christian Association of Cleveland. The idea originated with Mr. Henry A. Norton, who had some instruction in the designing of ships in a preliminary way under Professor Frisbie of Boston, and who has secured a promise of assistance as instructor of the Cleveland class from Joseph R. Oldham. The class will be organized Oct. 5 and will begin

work Thursday, Oct. 12. With ship yards in all parts of the great lakes district that are among the finest in the country, and with the interest that is of late felt everywhere in ships, Mr. Norton feels that the proposed instruction will be taken advantage of to an extent that will at least start a few young men on the road to a profession that is certain to offer great opportunities in this country in the near future. No elementary instruction or previous knowledge of designing or drafting is essential to students who wish to join the class. Application for instruction can be made to the superintendent of the association, Mr. C. H. Foote, or to Mr. Norton, who will be at the Y. M. C. A. building every Wednesday evening during the remainder of this month.

A subscriber in Massachusetts who is interested in vessel property on the great lakes, and who is well informed regarding lake affairs generally, says: "I am often amused with comment in the newspapers here regarding lake commerce, especially since the steamer Douglass Houghton blocked traffic in the St. Mary's river recently. One of the editors here tells us in a long editorial on the subject of the Houghton's accident that it happened in one of the approaches to the canal, while as a matter of fact it is about twenty-nine miles from the canal down to the Encampment cut. After adding that not a single ship passed into or out of Lake Superior during the blockade, he winds up by announcing that congress is to be asked to appropriate \$5,000,000 to widen Hay lake channel where the accident occurred. You know of course that it is about ten miles from the point of trouble to the lower end of Hay lake, and for about fourteen miles the lake is so wide that the vessels are allowed by Capt. Davis of the revenue cutter service to open up at full speed."

Mr. George Cook, who has for some time past served as draughtsman in the hull department of the Wm. Cramp & Sons Co. at Philadelphia, and who has received the highest testimonials from his employers, has resigned his position to go to England where he will study the higher theoretical naval architecture under Prof. J. Harvard Biles of the university of Glasgow. Mr. Cook is only twenty-four years of age, but has managed to do no end of hard studying thus far in life. He attended a military school until his seventeenth year, when he entered Webb's academy in New York. He graduated with the honors of his class and made the highest score in the naval examination held at Brooklyn shortly afterward. During his vacation in 1895 he visited Europe and on the voyage across the Atlantic assisted in the engine room and was regularly on duty. In 1896 his vacation was spent at John H. Dialogue & Son's ship yard at Camden, N. J. Later he went to the Cramp company.

Not long ago the Marine Review issued a table containing different rates of freight per bushel on grain and showing what these rates were equal to per ton in iron ore. It was not thought necessary to go above 6 cents with a grain rate in the table, as anything above that figure was regarded as a dream of the past in the matter of freights on the great lakes. It would seem, however, that it will be necessary before the present season of navigation is at an end to add a few figures to this comparative table, as the rate on wheat from Duluth to Buffalo reached 6 cents only a short time ago and will very probably exceed that figure, at least on a few cargoes, before Lake Superior is shut in by ice.

PICKLING PROCESS IN WOODEN HULLS.

The art of preservation of wooden steamers has reached its highest perfection probably, as practiced by the Detroit, Belle Isle & Windsor Ferry Co., operating on the Detroit river between Detroit, Mich., and Windsor, Ont. All of the ferry boats of this line are of wood and all in the most excellent condition. To one who is unacquainted with the system of care to which the ferry boats are subjected, the statement sometimes made by Secretary Campbell that none of the boats was ever known to leak a drop of water might seem most astonishing. The ferry boat Fortune has been in commission almost since the day she was launched in 1875. Possibly no boats on the great lakes are cared for so carefully as the ferry boats. Particularly are the hulls watched over closely. The liability of wood to rot when constantly in the water is guarded against by a process of pickling. Every two years the hulls of the ferry boats are subjected to the process. As much as 25 or 30 barrels of salt is used upon each hull upon each of these occasions. The salt is made into a brine and heated to the boiling point. This hot brine is then applied to the interior of the hull by the use of hose and pumps. Every inch of the oak is saturated and what brine is not immediately soaked in is allowed to stand in the bottom of the boat during the winter. The result is that in the spring the wood is like crystal and fairly glistens with the salt. An illustration of the hardness of one of the hulls so treated was given when recently it was found necessary to cut an ash port in the side of one of the ferry boats. To cut the hole, possibly 10 inches in diameter in the hull, required the services of a ship carpenter for two days. Even at that, it is related, the man ruined all his tools and also as many of his friends' tools as he could borrow.—Detroit Exchange.

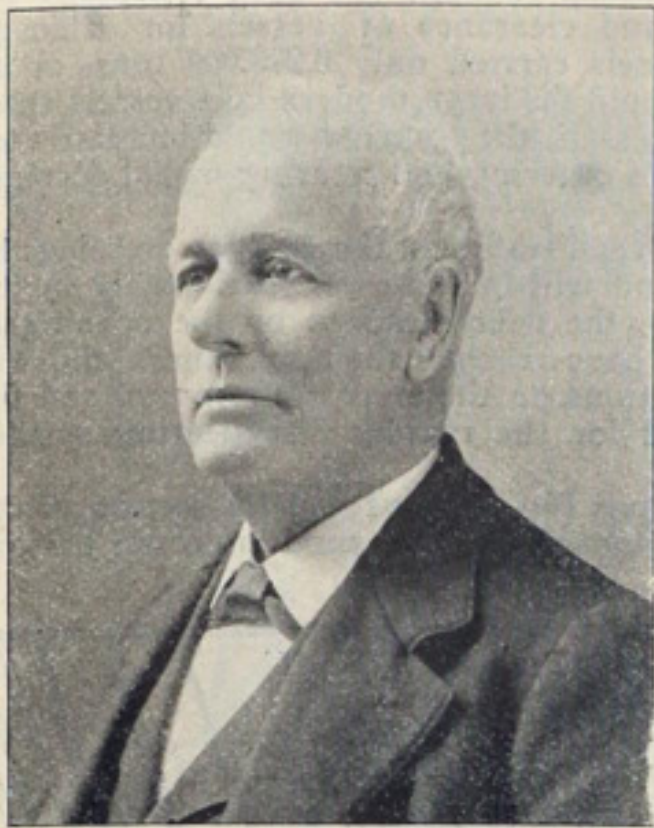
Col. Jared A. Smith, United States engineer at Cleveland, will open bids Oct. 2 for work to be done in the harbors at Lorain, Port Clinton and Monroe. At Lorain the channel is to be dredged to a uniform depth of 20 feet. The work involves the dredging of 230,000 cubic feet. At Port Clinton the stone work on the piers is to be repaired, and at Monroe the channel is to be dredged to a uniform depth of 14 feet.

There are now on exhibition at the art institute at Chicago sixty-five designs for a silver service to be presented to the battleship Illinois, building at the yard of the Newport News Ship Building & Dry Dock Co. In almost every design there is shown one or more shields, and it is the intention to have the colors worked out in these by means of red, white and blue enamel.

The Louisville & Cincinnati Packet Co., operating a line of steamers between the cities named, has contracted for the construction of two handsome new vessels. One of the new steamers will be built at the yard of Capt. E. J. Howard at Jeffersonville, Ind., while the contract for the other has been placed with the Queen City Marine Ways.

DEATH OF THOMAS FITZPATRICK.

Thomas Fitzpatrick, vessel owner, whose death was announced a few days ago, had been closely associated with the development of marine engineering on the great lakes from the days of the first steam vessel on the waters of Lake Ontario. His place when actively engaged was always in the front rank among marine engineers, even up to 1884 when he retired from the government steamboat inspection service to look after personal business interests. He had been in charge of the engines of the finest steam vessels of the lakes, including the "crack" revenue cutters that were built just after the war, and retained, even after he had passed his seventy-fifth year, a very clear knowledge of the progress that had been made with the marine engine during more than half a century.



Thomas Fitzpatrick, noted all through life for uprightness and fair dealing and highly respected by all who knew him, was born in Buffalo, June 26, 1822. Early in life he took to the lakes, beginning in the capacity of oiler, and working also in machine shops. At nineteen years of age he was appointed chief engineer of the then

popular side-wheel steamer Cleveland. The Cleveland was one of the finest steamers on the lakes at that time. For some time after this appointment he continued in the capacity of chief engineer of steam vessels, all of them among the best in the lake service, and in the winter he looked after the machinery equipment of new boats. He afterwards became chief engineer of the well known E. B. Ward line of steamers, which was a great line in its day. During the war Mr. Fitzpatrick was chief engineer of the Metropolitan Steamship Co.'s boats running out of New York. He made one trip to New Orleans and returned as chief engineer of the steamer Western Metropolis, which had been chartered to the government. On this trip a blockade runner was captured off the coast of Florida, Mr. Fitzpatrick receiving his share of the reward. This coast steamer Western Metropolis was named after the famous side-wheeler of the same name which was for a long time operated on Lake Erie in competition with what is now the Lake Shore railway. The coast steamer had the engines of the lake vessel. Mr. Fitzpatrick was also engineer in the Lake Erie line of elegant side-wheelers to which the Western Metropolis belonged. The Western Metropolis, although built very early in the days of steam navigation, held the record for speed between Buffalo and Cleveland until the fast side-wheelers of the present Cleveland & Buffalo Transit Co were built recently.

Mr. Fitzpatrick resided in Buffalo until 1861 and then went to Detroit to take charge of the E. B. Ward line of steamers. In 1865 he moved to Cleveland, having been appointed chief engineer of the United States revenue steamer John Sherman, stationed at Cleveland. He remained in the Sherman until 1871, when he resigned to accept the position of United States local inspector of steamer vessels at Cleveland, in which capacity he continued until 1884, retiring then to look after personal interests, which included considerable vessel property. His home after leaving the government service was at Mentor, O., where his death occurred on the 15th inst. He leaves a daughter, Mrs. Julius A. Cleveland of Mentor, O., and a son, Mr. John C. Fitzpatrick, agent of the Clover Leaf Steamboat line at Buffalo. Funeral services were held at Mentor, O., Sept. 16, and in Buffalo at his son's residence on the 17th. The interment was at Forest Lawn cemetery, Buffalo.

LORAIN HARBOR.

Editor Marine Review: Reference in your last issue to the harbor at Lorain touches a responsive chord, as I am familiar from personal observation during the past season with the situation at that place. There are great possibilities existing at the port on the west bank of Black river, similar to what has been developed at Conneaut harbor within two or three years. But the trouble is not alone in the outer part of the harbor at Lorain. At a point opposite the dry dock the water-front is occupied by an apology for a dock on which are located six or eight "swingers." The dock is so rotten and far gone that it is with difficulty that a timber head can be found which will hold a line and if one is found it would not be a safe matter to put a strain on the line. A large steel vessel in which I am interested has been there twice drawing about 18 feet and on both occasions it was impossible to get within 10 or 15 feet of the dock until the old-fashioned "swingers" with a boat thus removed from the dock will be readily understood by any one familiar with this kind of work. The situation becomes more aggravated with the steady increase in the size of vessels being handled at such docks, for when one boat is at the rigs another boat to lie behind her is obliged to have her stern swung out in the stream from 100 to 150 feet, necessitating a shifting of the ship every time another craft desires to pass. This could all be readily remedied by a dredge cutting off the point that makes out in the river opposite the dry dock. It would seem that some of the dock interests at this point are fully as slow as the city officials in taking advantage of the opportunities that are offered for a port of great business.

Detroit, Sept. 20, 1899.

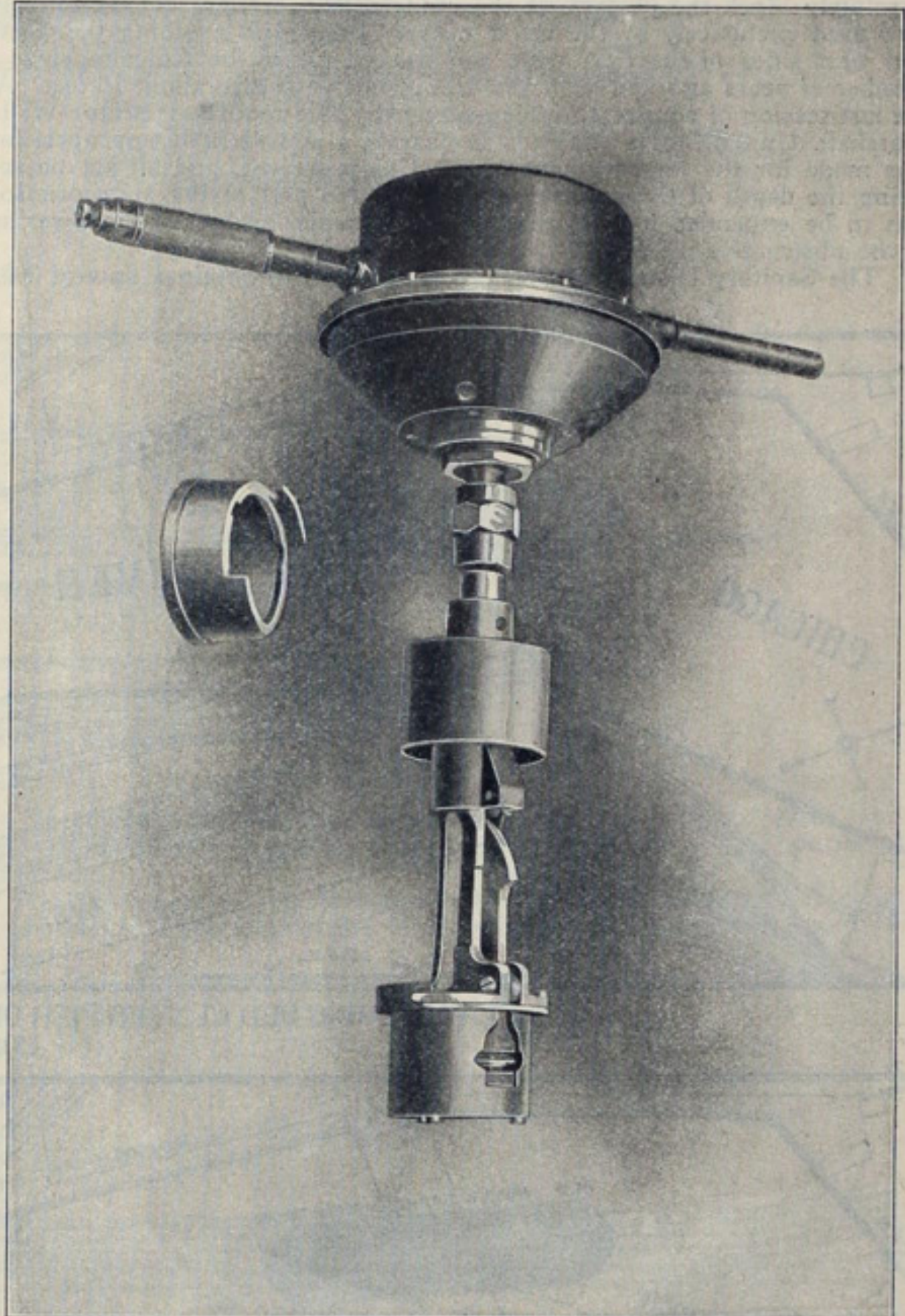
VESSEL OWNER.

The Harlan & Hollingsworth Co. of Wilmington, Del., recently shipped a casting weighing twenty-two tons to the Southwark Co. of Philadelphia. The cylinder is the first of five to be manufactured for the same firm.

HENDRICKSON FLUE CUTTER.

The Hendrickson flue cutter, illustrated herewith, is a newly patented article, and has been found so successful in operation that it is being put upon the market by Chicago Pneumatic Tool Co. It is made in any size to suit requirements. The illustration shows a machine for 4½-inch flues. This machine has been adopted as standard by the Chicago & Northwestern Railroad.

The cutting wheel is fed against the flue by the cylinder and piston arrangement, shown about the middle of the machine, the air pressure passing through the motor to operate the piston, and the air motor revolving



the cutter at the same time. The machine will cut off the flues either inside or outside the flue sheet, and on 4½-inch flues it has been found very efficient, cutting them off in about twenty seconds, and in much less time on locomotive flues. Any mechanic will very quickly appreciate the advantage of this tool, on account of the great saving effected over hand work, and there is also a further saving effected in that the machine cuts off the flues close to the sheet, thus making but very little waste on the flues.

NAVAL VESSELS TO BE SOLD.

Proposals will be received by the navy department until Oct. 10 for the sale of four condemned war vessels. The appraised values of the respective craft are: U. S. S. Hector, Boston, Mass, \$50,000; U. S. S. Ajax, League island, Pa., \$13,000; U. S. S. Passaic, Pensacola, Fla., \$11,000. Other particulars of the vessels are:

U. S. S. Hector—Schooner rigged; built in 1883 at Newcastle by Wigham, Richardson & Co.; length, 330 feet 2½ inches; breadth, 38 feet 3½ inches; mean draught, 22 feet; gross tonnage, 2,792; net tonnage, 1,892; speed, 10 knots; bunker capacity, 750 tons; cargo capacity for coal, 2,600 tons; present condition of the machinery is that a very large portion of it is apart and is placed on board, but not erected. This vessel was formerly the Spanish vessel Pedro, and was captured in April, 1898, and after being condemned as a prize was bought by the navy department.

U. S. S. Ajax—Low free-board single-turret monitor, built in 1862 by Snowden & Mason, Pittsburg; length, 225 feet; breadth, 43 feet 8 inches; mean draught, 13 feet 6 inches; displacement, 2,100 tons; indicated horse power, 340; single screw grass-hopper type of engine; side armor, 5 inches; turret armor, 10 inches.

U. S. S. Passaic—Low free-board, single-turret monitor, built in 1862 by John Ericsson, Brooklyn, N. Y.; length, 200 feet; breadth, 46 feet; mean draught 11 feet 6 inches; displacement, 1,875 tons; indicated horse power, 340; type of engine, single-screw grass-hopper; side armor, 5 inches; turret armor, 11 inches.

It has been arranged to dock the battleship Kearsarge, recently completed by the Newport News Ship Building & Dry Dock Co., in the large wooden dry dock No. 3 at the Brooklyn navy yard. Considerable work had to be done on the dock in question, in order to make it ready for the occupancy of the big battleship.

CHICAGO HARBOR IMPROVEMENTS.

THE IMPORTANT PART PLAYED BY INSTALLATIONS OF SCHERZER ROLLING LIFT BRIDGES.

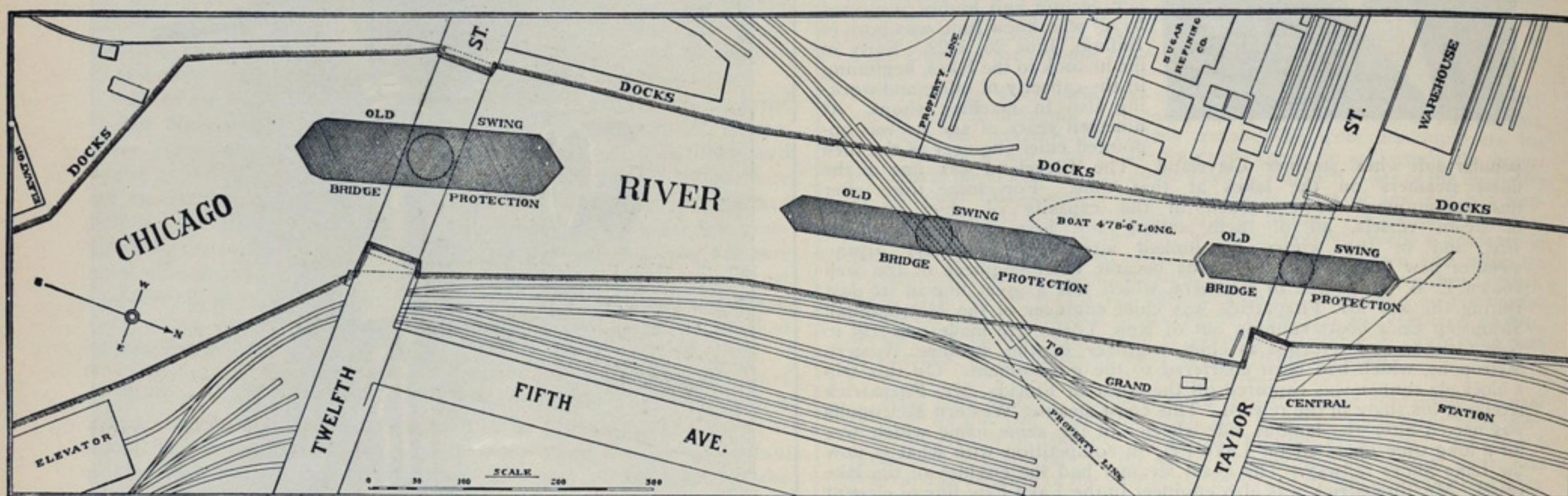
The most serious obstacle in the way of the retention and development of the marine commerce of the city of Chicago is the unimproved condition of the Chicago river. The large modern lake vessels now carrying the bulk of the commerce of the great lakes are prevented from entering the port of Chicago because the channel of the river is obstructed by more than fifty swing bridges, whose center piers and pier protections absolutely block the passage of the modern lake carrier. Three tunnels, now used exclusively by the street railway companies reaching the north and west sides of the city, were constructed under the Chicago river a number of years ago and limit the draught of vessels to about 16 feet. At the last session of congress, influenced by the able reports of Major W. L. Marshall, United States engineer in charge, a considerable appropriation was made for the improvement of the Chicago river, and an act passed fixing the depth of the channel at 22 feet. No part of the appropriation was to be expended for the removal of center-pier bridges or the lowering of the obstructive tunnels.

The Sanitary District of Chicago is required to obtain a flow of 300,-

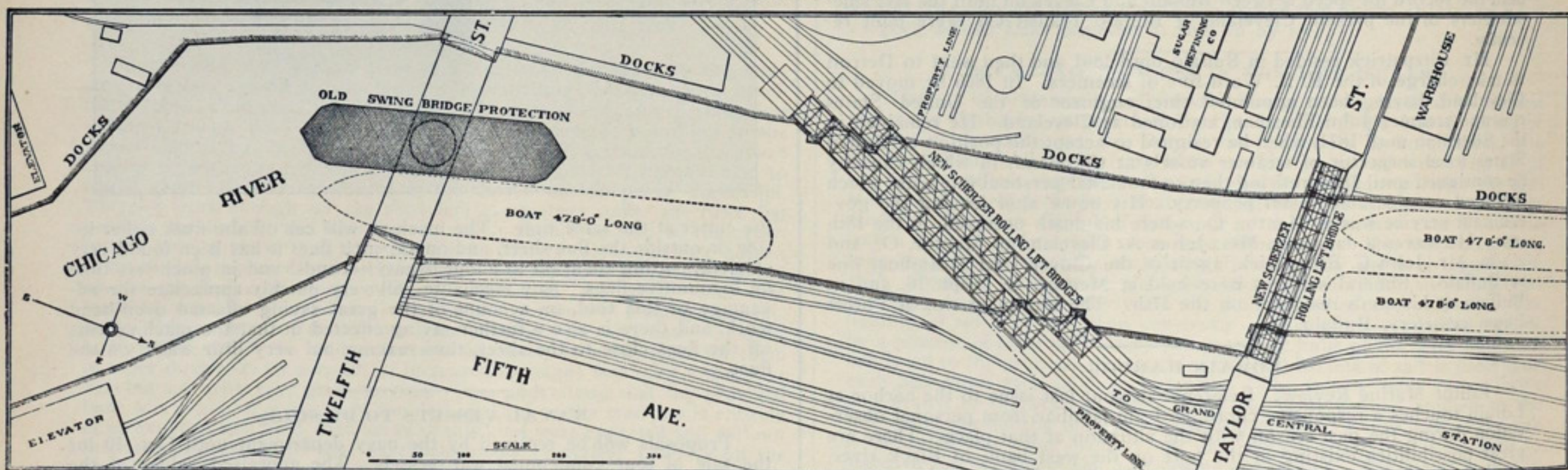
The marine commerce of the city of Chicago in 1898 amounted to 15,116,000 tons, carried in 18,512 vessels, making the average cargo 817 tons. The number of vessels entering and clearing at Chicago exceeded that of the port of New York by about 5,000 vessels. The tonnage equalled that of the port of London and exceeded the tonnage of Liverpool by about 5,000,000 tons. There has been a constant decrease in the number of vessels entering the port of Chicago during the last thirty-five years, but the average cargo and total annual tonnage has been constantly increasing. The largest entrance and clearance of vessels for Chicago occurred in 1869, when 27,634 vessels carried only 6,273,000 tons, or an average cargo of only 227 tons. Could the large modern lake vessels enter this port and displace the smaller vessels, the tonnage would increase very materially, but the number of vessels entering and clearing would decrease very materially.

Although the highway and railroad traffic on the bridges crossing the Chicago river is now very large and will increase proportionately in the future with the growth of the city, the delays caused by the opening of bridges for the passage of vessels have reached their maximum and will continually decrease as the obstructions on the river are removed and the new larger carriers are substituted for the rapidly disappearing smaller vessels of the past.

In the accompanying illustrations Fig. 1 shows a short section of the Chicago river and illustrates the impossibility of a modern vessel passing



PLAT SHOWING OLD CENTER PIER OBSTRUCTIONS AT TAYLOR ST. & R.R. BRIDGES.
CHICAGO, ILL.



PLAT SHOWING PIER OBSTRUCTIONS REMOVED BY NEW SCHERZER ROLLING LIFT BRIDGES.
CHICAGO, ILL.

000 cubic feet of water per minute through the drainage canal. This flow of water is to be supplied from Lake Michigan and pass through the Chicago river into the drainage canal. The highway swing bridge at Taylor street and the railroad bridge from the Grand Central station, between Taylor and Twelfth streets, formed an obstruction to the passage of the required volume of water that could only be obviated by the removal of the bridges and the substitution thereof of bridges having their center piers on shore, or the construction of an extensive by-pass system under some very valuable railroad and warehouse property. The board of trustees of the Sanitary District, after a very careful study and consideration of the problem, decided to remove the two swing bridges mentioned and construct in place thereof two rolling lift bridges. Their decision was largely influenced by the fact that the report of the chief engineer showed a saving of \$95,000 in favor of the rolling lift bridges as against the building of the by-passes. The removal of those two swing bridges will do away with one of the most serious obstructions to the passage of modern lake vessels on the Chicago river and will be one of the first steps toward the removal of all obstructions, in compliance with the act of congress. In deciding upon this improvement the sanitary commission had in view the great benefit which its action would give toward retaining the present marine commerce of Chicago and, together with the development of the drainage canal as a part of the harbor of Chicago, increasing the tonnage of this port many fold.

the Taylor street highway and railroad swing bridges. Another plat shows these two swing bridges removed and replaced by two Scherzer rolling lift bridges, each giving a clear waterway for navigation of 120 feet at right angles, and a sufficient channel for the flow of 300,000 cubic feet of water per minute to the drainage canal. The Twelfth street swing bridge was not removed because there is just sufficient area for the passage of the required volume of water, but this bridge will have to be removed in order to permit the passage of modern vessels.

In Fig. 2 there is presented a general plan of the new Scherzer rolling lift bridge now under construction to accommodate the railroad traffic to and from the Grand Central station. The design is for two double-track bridges, side by side, to be operated either jointly or singly, as desired. One of the double-track spans is now being constructed. The other span is to be constructed as soon as the increase in the railroad traffic makes its construction necessary. The bridge is designed as a through-truss cantilever and crosses the channel at the very acute angle of $36^{\circ} 30'$, which necessitates a span of 275 feet, center to center of end bearings, in order to give a clear waterway for navigation of 120 feet, the minimum required by the United States war department for the Chicago river. "Cooper's Specifications for Railroad Bridges," 1896 edition, controlled the design as far as applicable. The loading is 10,000 pounds per lineal foot of bridge, with a concentrated load of 50,000 pounds at any point of each track. The bridge will be operated by electricity, and although provision is made

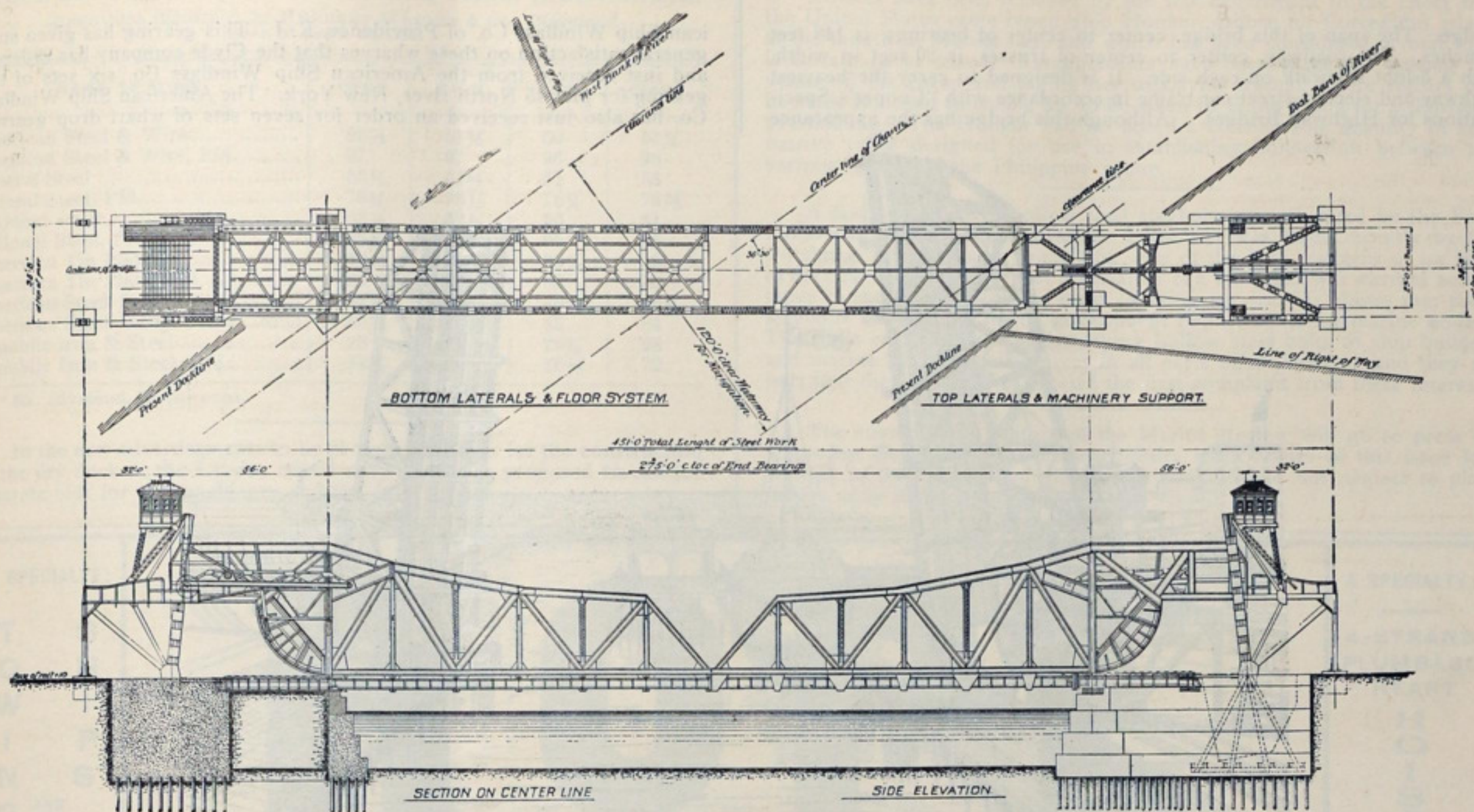


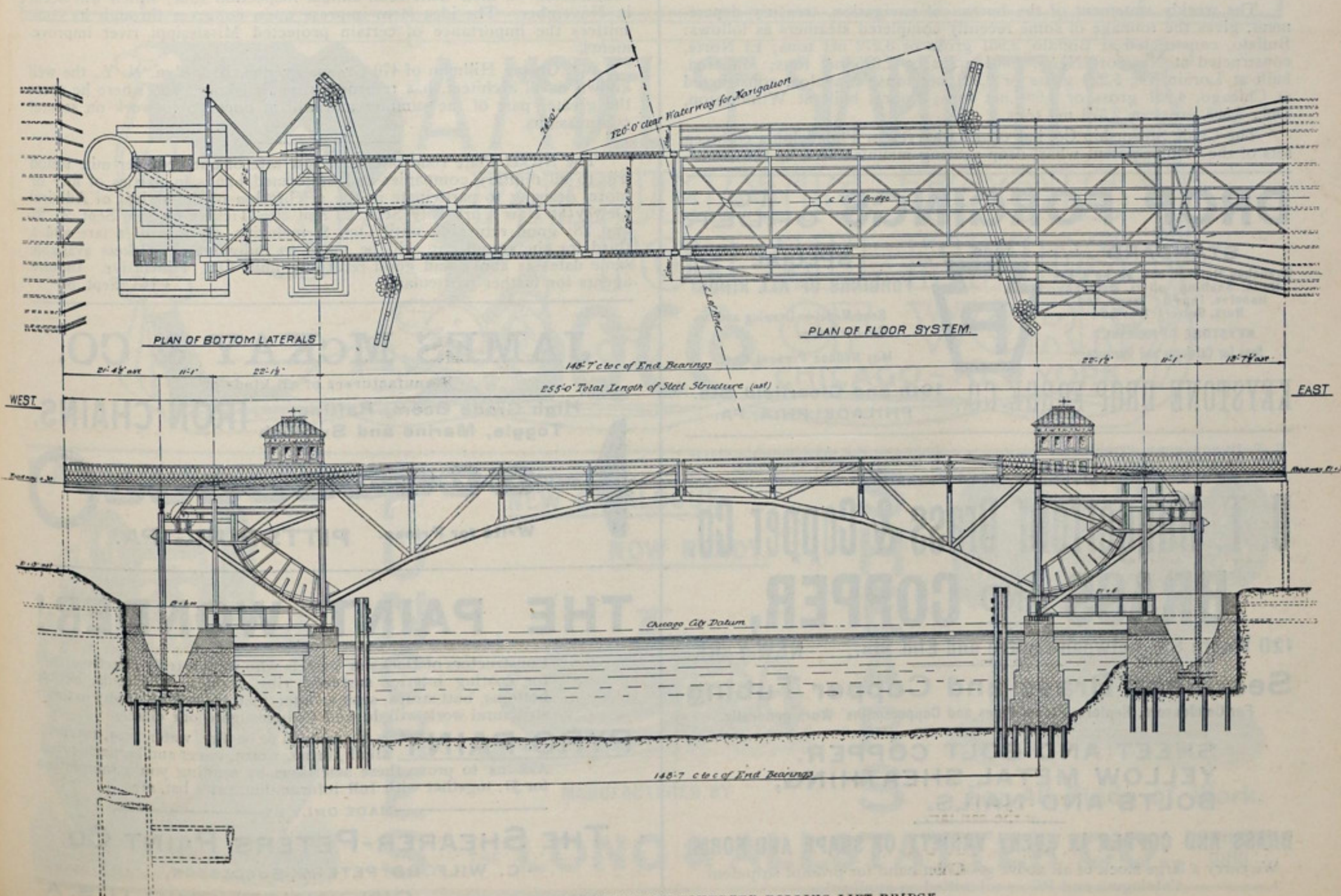
FIG. 2. GENERAL PLAN OF RAILROAD SCHERZER ROLLING LIFT BRIDGE.

for an operator on each side of the river, yet the machinery and electrical equipment will be so arranged that the bridge may be operated by one man from the operator's house on one side of the channel. The structure will be counterbalanced so as to be at rest when opened at an angle of about 40 degrees. This will greatly assist the machinery in opening and closing the bridge and will prevent any possibility of the bridge falling shut and disabling the structure through any accident. The substructure

is to be composed of Portland cement concrete and Bedford stone, and is to rest upon piles driven to rock and cut 5 feet below the bottom of the channel.

Fig. 3 is a perspective view of this bridge. Were the bridge to cross the channel at right angles the clear opening for navigation would be 255 feet.

Fig. 4 is a general plan of the new Taylor street highway rolling lift



GENERAL PLAN OF HIGHWAY SCHERZER ROLLING LIFT BRIDGE.

bridge. The span of this bridge, center to center of bearings, is 148 feet 7 inches. The roadway, center to center of trusses, is 20 feet in width, with a 5-foot sidewalk on each side. It is designed to carry the heaviest highway and electric street car traffic in accordance with "Cooper's Specifications for Highway Bridges." Although this bridge has the appearance

ican Ship Windlass Co. of Providence, R. I. This gearing has given such general satisfaction on these wharves that the Clyde company has ordered, and just received from the American Ship Windlass Co. six sets of the gearing for pier 45 North river, New York. The American Ship Windlass Co. has also just received an order for seven sets of wharf drop gearing

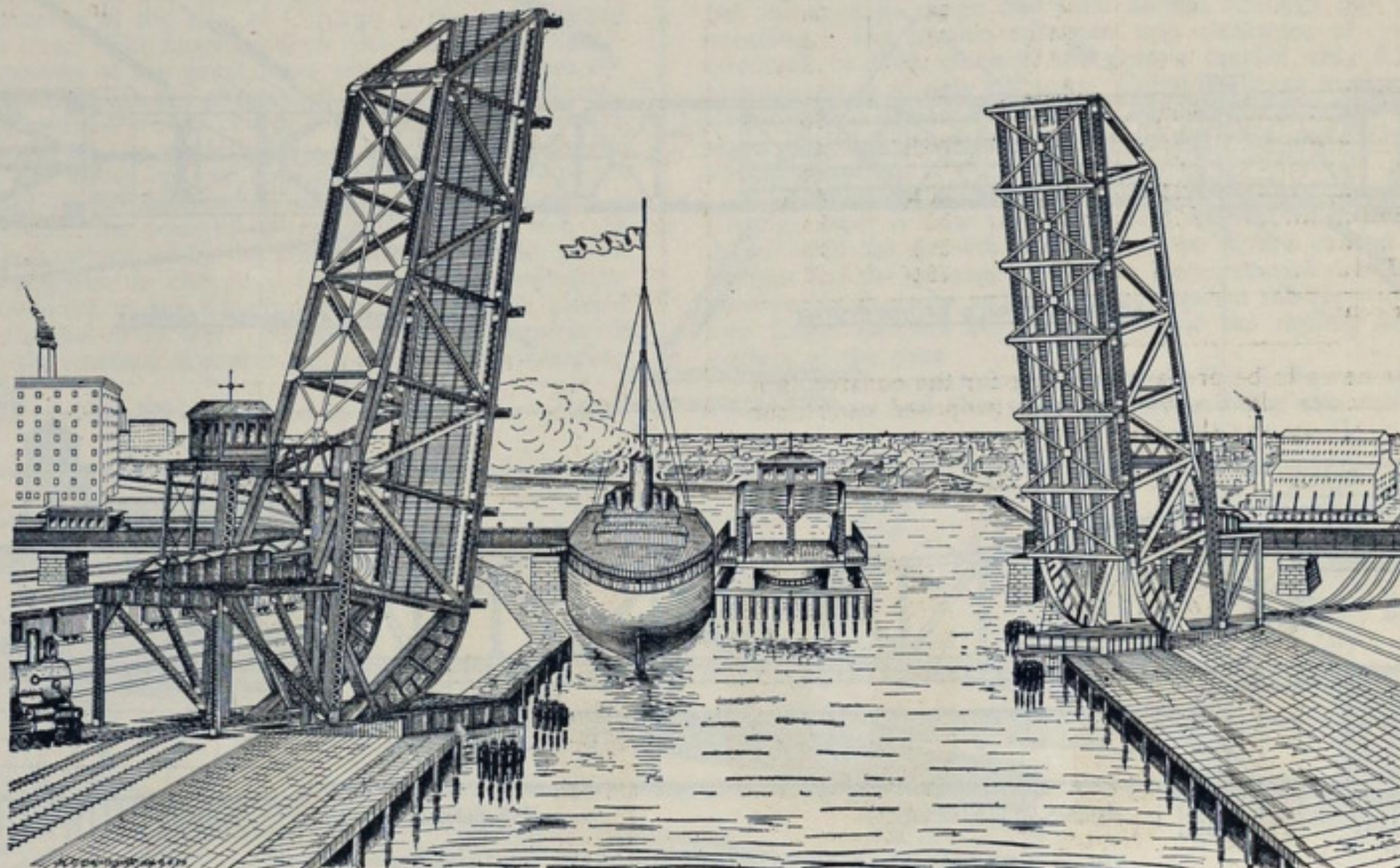


FIG. 3. PERSPECTIVE VIEW OF RAILROAD SCHERZER ROLLING LIFT BRIDGE.

of an arch, it is designed to act as a cantilever, the live-load stresses being carried by means of anchorages to the rear of the supporting piers. It will be operated similarly to the railroad bridge above mentioned. A sufficient clearance under the bridge is allowed for the passage of tugs without opening the structure.

ITEMS OF INTEREST.

The weekly statement of the bureau of navigation, treasury department, gives the tonnage of some recently completed steamers as follows: Buffalo, constructed at Buffalo, 3,951 gross or 3,272 net tons; El Norte, constructed at Newport News, 4,604 gross or 2,925 net tons; Malietoa, built at Lorain, O., 5,229 gross or 3,921 net tons; Manaloa, constructed at Chicago, 4,961 gross or 4,004 net tons; Ponce, built at Wilmington, Del., 3,503 gross or 2,579 net tons.

The Clyde Steamship Co. has on its wharves in Philadelphia eighteen sets of the Winter patent wharf drop gearing manufactured by the Amer-

ican Ship Windlass Co. of Providence, R. I. This will make in the neighborhood of forty of these wharf drops in the service of the Philadelphia & Reading Railway at Philadelphia.

It is understood that Senator Frye, chairman of the senate committee on commerce, and Chairman Burton of the house committee on rivers and harbors will be the official guests of the members of the Mississippi river commission on their next semi-annual inspection tour, which will occur in November. The idea is to impress upon congress through its committees the importance of certain projected Mississippi river improvements.

Mr. Gustav Hillman of 470 Greene avenue, Brooklyn, N. Y., the well known naval architect, has returned from Salisbury, Vt., where he spent the greater part of the summer and will at once go to work on several commissions.

The Nickel Plate road offers the low rate of one cent per mile round trip to all military companies and uniformed bands in parties of fifty or more, desiring to participate in the celebration of the arrival of Admiral Dewey at New York City Sept. 29 and 30. Tickets on sale Sept. 26, 27 and 28; good returning until Oct. 2, inclusive. A rate of a fare and a third for the round trip will be made to individuals. Tickets available same dates as above and good returning until Oct. 4 inclusive. Inquire agents for further particulars. 143, Sept. 30

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American Steel & Wire, Pfd.....	97	97	96	96
Federal Steel	53 1/2	54 1/2	51	53
Federal Steel, Pfd.....	78 1/4	78 1/2	76 1/4	76 7/8
National Steel	52 1/2	52 1/2	50	51
National Steel, Pfd*	95 1/4	95 1/4	95	95
American Tin Plate	39 1/2	39 1/2	38 1/2	39
American Tin Plate, Pfd.....	86	86	85	85
American Steel Hoop.....	42 1/2	42 1/2	40 3/4	40 3/4
American Steel Hoop, Pfd.....	85 3/8	85 3/8	83	84
Republic Iron & Steel	28	28	26 3/4	28
Republic Iron & Steel, Pfd.....	71 1/2	72	70 1/8	72

* Ex. Dividend, 1 1/2 per cent.

In the new advertisements to be prepared for bids for the construction of the dry dock at the League island navy yard it is proposed to call for separate bids for the machinery and the dock proper.

Advices have been received by the war department to the effect that the United States cable repair ship Hooker, ashore on Corregidor island at the mouth of Manila bay, and which has been considered a total loss, is certain to be saved. Arrangements have been made for getting the vessel off the rocks and taking her to Cavite arsenal, where repairs can be made sufficient to enable her to be taken to Hong Kong for a thorough overhauling. The Hooker had on board a considerable quantity of submarine cable designed for use in establishing connection between the various islands of the Philippine group.

A test of the safety hollow steel staybolts manufactured by the Falls Hollow Staybolt Co. of Cuyahoga Falls, O., was made recently by the Pittsburg Testing Laboratory, Ltd., one of the best concerns of its kind in the country, and the report is certainly of a kind that will warrant acceptance of the material for the most exacting service. It shows that these staybolts are fully up to the government requirements for marine boilers. The Falls company is now furnishing hollow steel bolts to ship builders and marine boiler manufacturers in all parts of the country and they report that they have yet to receive the first complaint from these interests.

The annual naval edition of the Marine Review will go to press on Thursday, Sept. 28. Persons who desire extra copies of this issue forwarded to them or mailed direct to friends, should not neglect to place orders early in the week.

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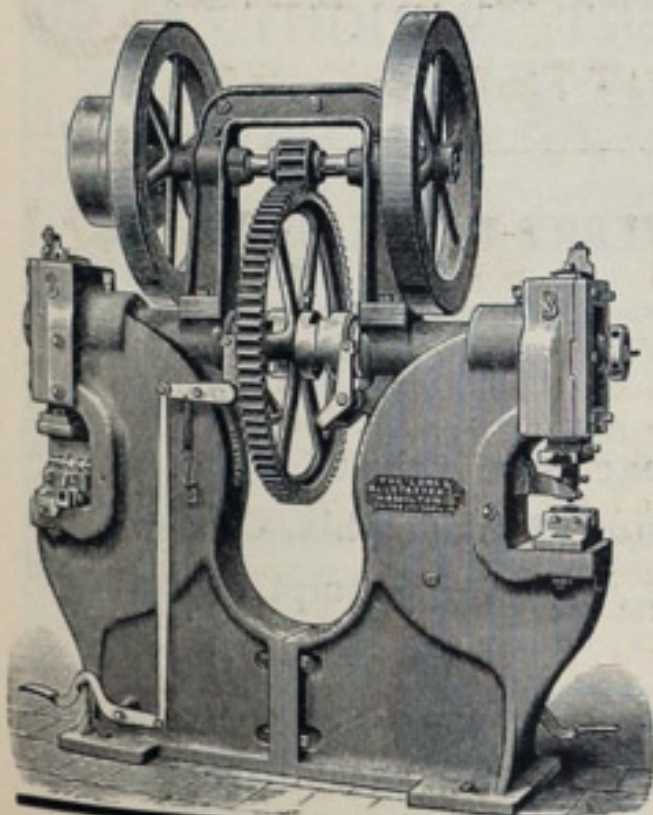
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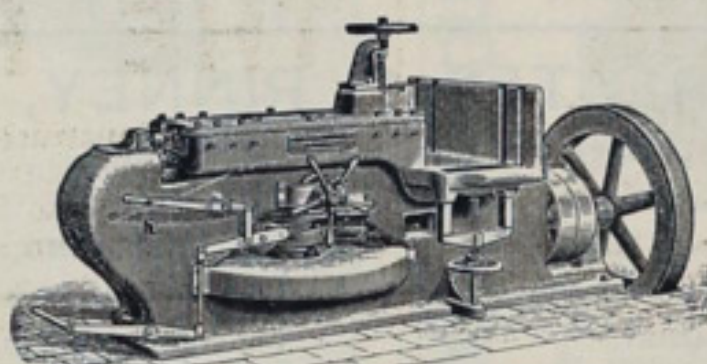
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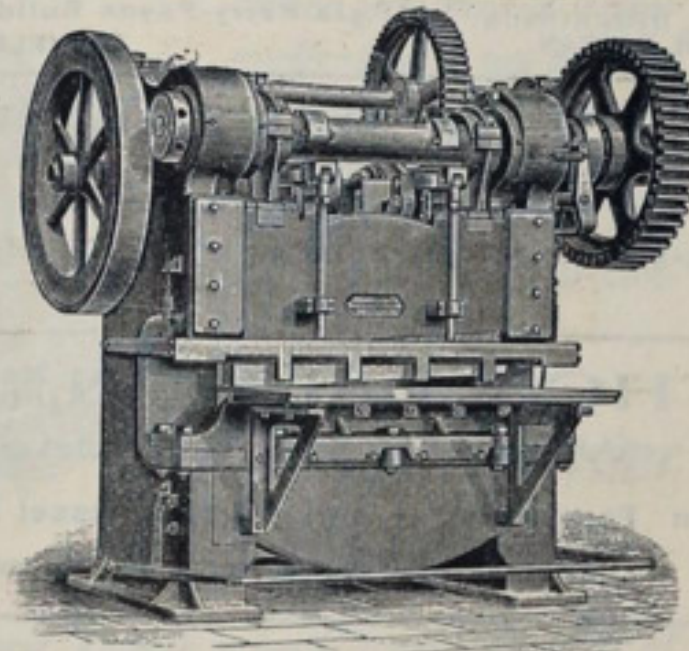
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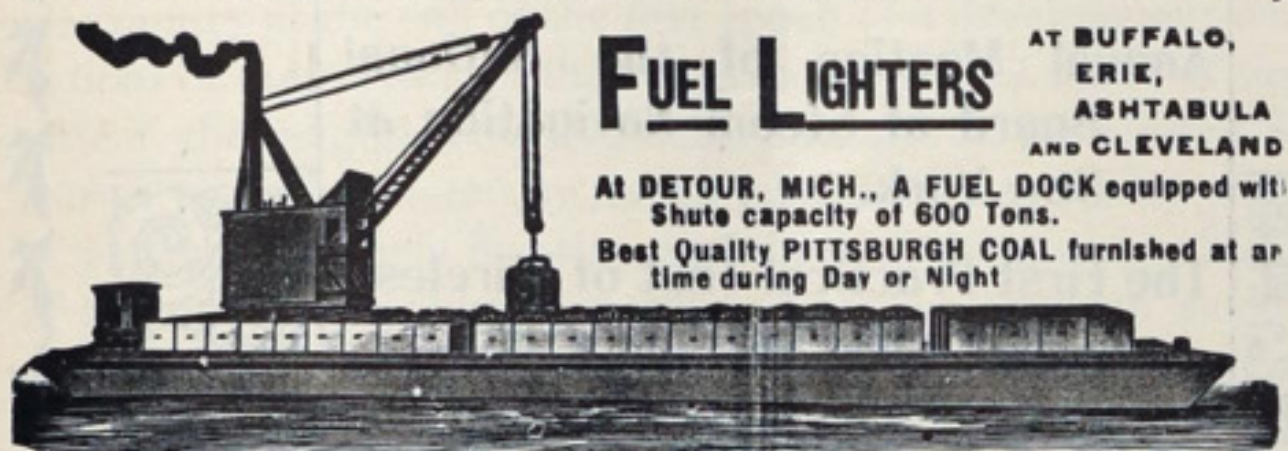
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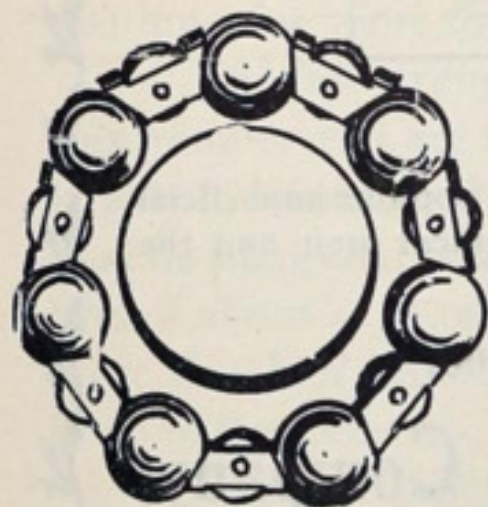
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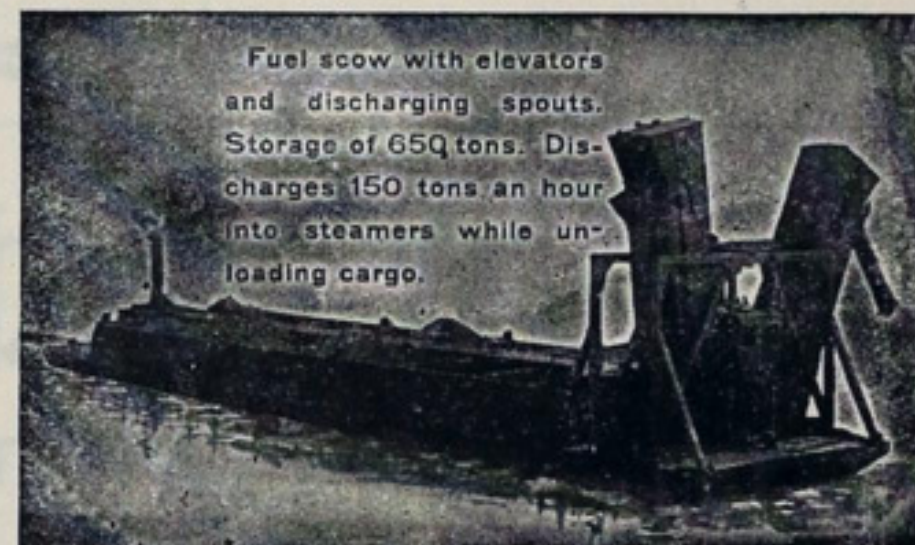
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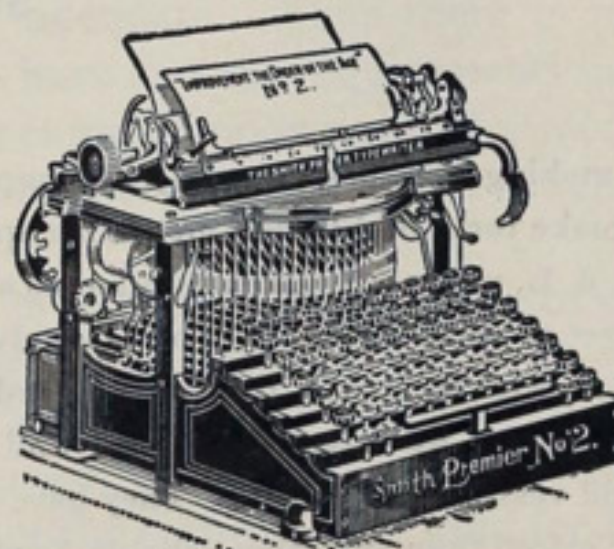
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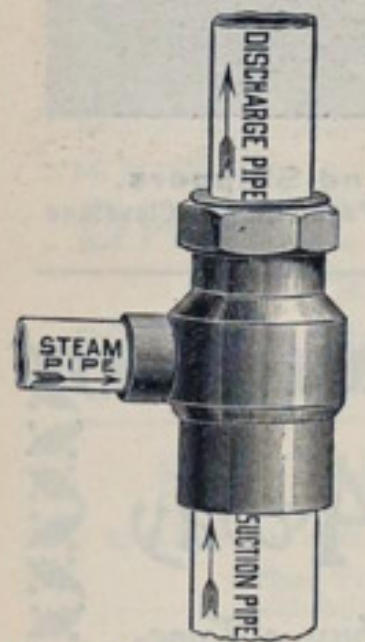
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